



## DESCRIPTION OF THE SAMPLE

This sample is available in the form of chips all passing a 1700 µm aperture sieve from which the dust passing a 250 µm aperture sieve has been removed.

It is supplied in bottles containing 100g...ref 292-1(C) It is also supplied in the form of 38mm dia. x 30mm thick discs...ref 292-1(D)

An area 6mm in diameter in the centre of the discs, 292-1(D), should be avoided for optical emission spectrometry.

## PARTICIPATING LABORATORIES

AB Sandvik Steel, Sandviken (Sweden)

Acerinox (Spain)

Aubert & Duval, Les Ancizes (France)

Bundesanstalt für Materialforschung und -prüfung (BAM) Berlin (Germany)

Böhler GmbH, Kapfenberg (Austria)

Centro Nacional de Investigaciones Metalurgicas (CENIM), Madrid (Spain)

Centro Svitluppato Materiali, Rome (Italy)

Cockerill Sambre, Charleroi (Couillet) (Belgium)

Department of Quality Assurance/Technical Support, MOD, London (UK)

Hoogovens Groep BV, IJmuiden (Holland)

Institute de Recherches de La Sidérurgie Francaise, (IRSID), Maizières-lès-Metz (France)

Institutet för Metallforskning, Stockholm (Sweden)

Klöckner Stahl GmbH, Bremen (Germany)

Laborlux S.A., Esch-sur-Alzette (Luxembourg)

Langley Alloys Ltd., Slough (UK)

Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf (Germany)

Ridsdale & Co. Ltd., Middlesbrough (UK)

Sheffield Testing Laboratories Ltd., Sheffield (UK)

Staatliches Materialprüfungsamt Nordrhein-Westfalen, Dortmund (Germany)

Stocksbridge Engineering Steels Ltd., Sheffield (UK)

Ugine A.C.G., Isbergues (France)

Ugine, Savoie (France)

## METHODS USED EURONORM-CRM 292-1

Element	Line Number	Methods
C	1- 2-12	Combustion, non aqueous titration
	3- 4- 5- 6- 7- 9-10-11-13-16-17-18-19-20	Combustion, infrared absorption
	8	Combustion, coulometric titration
	14-15	Combustion, conductimetry
Si	2- 5- 9-11-12-13-14-17-18-19-20	Gravimetry, dehydration with perchloric acid
	3- 6-15-16	Plasma emission spectrometry
	4	Gravimetry, dehydration with sulphuric acid
	7-10	Photometric, molybdenum blue without extraction
	8	Photometric, silicovanadomolybdate without extraction
Mn	1- 3- 7- 8-10-16-17-18	Photometric, periodate oxidation
	2- 4- 6- 9-12-15	Plasma emission spectrometry
	5-19	FAAS
	11-13	Photometric, persulphate oxidation
	14	Titration with Mn (VII), zinc oxide separation
P	1	Acidimetric titration of ammonium phosphomolybdate
	2- 4- 7-16-18	Plasma emission spectrometry
	3- 8-11	Photometric, molybdenum blue without extraction
	5-13	Photometric, molybdenum blue with extraction
	6-10-12-14-17	Photometric, phosphovanadomolybdate with extraction
S	9	Photometric, phosphovanadomolybdate without extraction
	19	Photometric, molybdenum blue after separation of interfering elements
	2- 4- 5- 6- 7- 9-12-13-15-16-17-18-19	Combustion, infrared absorption
	3	Gravimetric as BaSO <sub>4</sub> after chromatographic separation on alumina
	8-11	Combustion, conductimetry
Cr	14	Combustion, acidimetric titration; absorption in hydrogen peroxide or silver nitrate
	2-11-16	Titration with Fe (II), oxidation with perchloric acid
	4- 5- 6- 7- 8- 9-10-12-13-14-15-17-18-19	Titration with Fe (II), oxidation with persulphate
	1- 4- 9-10-11-14-15-17	Plasma emission spectrometry
	2- 6-13	Photometric, thiocyanate in presence of Sn (II), extraction
Mo	5- 7-12-16	FAAS
	8	Photometric, thiocyanate in presence of ascorbic acid, extraction
	2- 6- 9-12-13-14-16-17-18	Gravimetry, dimethylglyoxime
	3-11	Complexometric titration, visual end point
	4	Cyanometric titration
Ni	5-10	Plasma emission spectrometry
	7-15-19	Photometric, dimethylglyoxime, no extraction
	8	Titration with Cr (VII), separation with dimethylglyoxime, Fe (III) oxidation
	20	Photometric, dimethylglyoxime, extraction
Co	3- 5- 6- 9-12-13-16-18-19-20-21	FAAS
	4-17	Photometric, Nitroso-R-salt
	7- 8-10-14-15	Plasma emission spectrometry
Cu	1- 3-11-15-17-20	Plasma emission spectrometry
	2- 4- 5- 6- 8-12-13-14-16-18-19	FAAS
	7- 9-10	Photometric, cuproine, without extraction
N	1- 2- 3- 5- 6- 7- 8- 9-10-11-12-13	Thermal conductivity, decomposition in graphite crucible
	4	Acidimetric titration after distillation, visual end point
	14	Photometric, indophenol blue, distillation
Nb	1- 7-10-11-14-15	Photometric, PAR
	2- 4- 5- 8- 9-12-17-18	Plasma emission spectrometry
	3- 6	Gravimetry, sum of Ta and Nb oxides separated by hydrolysis
	13-16	Photometric, PAN, extraction

**METHODS USED  
EURONORM-CRM 292-1**

Element	Line Number	Methods
Al	1- 2- 3- 4	AAS, graphite furnace
	5	FAAS, without separation
	6- 7	Plasma emission spectrometry
As	1- 6- 7- 12	Plasma emission spectrometry
	2- 5-11	AAS, graphite furnace
	4	Photometric, diethyldithiocarbamate, separation as arsine
	8	FAAS
	9	AAS, evolution as arsine
B	10	Photometric, molybdenum blue, halide extraction
	1- 3- 5- 6- 9	Photometric, curcumin
Ca	2- 4- 7	Plasma emission spectrometry
	1- 5- 6	Plasma emission spectrometry
Ta	2- 3- 4- 7- 8- 9-10	FAAS
	1	Photometric, phenylfluorone, separation
	2	Photometric, pyrogallol, separation of the oxides
	3- 4	Plasma emission spectrometry

**FURTHER INFORMATION**

For information regarding the preparation, certification and supply of these European Certified Reference Materials (EURONORM-CRMs) and the use of the statistical information given on this certificate, please refer to Information Circulars No. 1 (ECISS) and No. 5 (ECSC), both of which are available from the national standards body in your country. (In the UK this is the BSI, 2 Park Street, London W1A 2BS).

Des informations complémentaires sur la fabrication, la certification et la distribution des Matériaux de Référence Certifiés Européens (EURONORM—MRC) ainsi que sur l'utilisation des informations statistiques données sur le certificat se trouvent dans les circulaires d'information No. 1 (ECISS) et No. 5 (CECA). On peut se procurer ces deux circulaires auprès des organismes nationaux de normalisation. (Pour la France: AFNOR, Tour Europe - Cedex 7, 92080 Paris La Défense).

Angaben über Herstellung, Zertifizierung und Bezugsmöglichkeiten dieser Zertifizierten Europäischen Referenzmaterialien (EURONORM-ZRM) sowie über die Anwendung der in diesem Zertifikat enthaltenen statistischen Daten finden sich in den Mitteilungen Nr. 1 (ECISS) und Nr. 5 (EGKS), beide zu beziehen durch die nationalen Normenorganisationen. (In Deutschland bei der Vertriebsstelle des DIN: Beuth-Verlag GmbH, Burggrafenstrasse 4-10, 1000 Berlin 30).