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ROUTINE METHOD FOR ANALYSIS OF HIGH ALLOY STEEL BY X-RAY FLUORESCENCE SPECTROMETRY (XRF) BY USING A NEAR BY TECHNIQUE

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English Version

Routine method for analysis of high alloy steel by X-ray Fluorescence Spectrometry (XRF) by using a near by technique

Méthode de routine pour l´analyse des aciers fortement alliés par spectrométrie de fluorescence de rayons X (SFRX) à l´aide d´une méthode de correction

Standardverfahren zur Analyse von hochlegiertem Stahl mittels Röntgenfluoreszenzspektroskopie (RFA) unter Anwendung eines Vergleichs-Korrekturverfahrens

This European Standard was approved by CEN on 24 May 2006.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 10315:2006) has been prepared by Technical Committee ECISS/TC 20 “Methods of chemical analysis of ferrous products”, the secretariat of which is held by SIS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2007, and conflicting national standards shall be withdrawn at the latest by January 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies a procedure on how to improve the performance of a routine XRF method, already in use for analysis of high alloy steels, by using a ”near by technique”.

The ”near by technique” requires at least one target sample (preferable a CRM) of a similar composition as the unknown sample.

The method is applicable to elements within the concentration ranges according to Table 1:

Table 1 — Concentration ranges

Element	Concentration range, % (m/m) [a]
Si	0,05 to 1,5
Mn	0,05 to 5,0
P	0,005 to 0,035
Cr	10 to 25
Ni	0,1 to 30
Mo	0,1 to 6,5
Cu	0,02 to 1,5
Co	0,015 to 0,30
V	0,015 to 0,15
Ti	0,015 to 0,50
Nb	0,05 to 1,0
[a] The concentration ranges specified, represents those ranges studied during the precision test. The procedure has the potential to be used outside those ranges but it needs to be validated by each laboratory in every case.	

The method is applicable to analysis of either chill-cast or wrought samples having a diameter of at least 25 mm and with a carbon concentration of less than 0,3 % (see NOTE). Other elements should have a concentration below 0,2 %.

NOTE High carbon concentrations, in combination with high Mo and Cr concentrations, could have undesirable structural effects on the sample and could affect the determination of phosphorus and chromium, in particular.

Matrix effects exist between the elements listed. To compensate for those inter-element effects, mathematical corrections shall be applied. A variety of computer programs for corrections is commonly used and included in the software package from the manufacturers.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 10280, *Steel and iron — Determination of titanium content — Diantipyrylmethane spectrophotometric method (ISO 10280:1991)*