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IRISH STANDARD

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77.140.20

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

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EUROPEAN STANDARD

**EN 10315**

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ICS 77.040.30; 77.140.20

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.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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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of an identical text or by endorsement, at the latest by January 2007, and conflicting national standards shall be withdrawn at the latest by January 2007.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.

**EN 10315:2006 (E)****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) <sup>a</sup>
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
<sup>a</sup> The concentration ranges specified, represents those ranges studied during the precision test. The procedure has the potential to be used outside those ranges <u>but</u> 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)*

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