Founding - Examination of surface condition

EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

See Eesti standard EVS-EN 1370:2011 sisaldab Euroopa standardi EN 1370:2011 ingliskeelset teksti.	This Estonian standard EVS-EN 1370:2011 consists of the English text of the European standard EN 1370:2011.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 21.12.2011.	Date of Availability of the European standard is 21.12.2011.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Founding - Examination of surface condition

Fonderie - Contrôle de l'état de surface

Gießereiwesen - Bewertung des Oberflächenzustandes

This European Standard was approved by CEN on 12 November 2011.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 1370:2011) has been prepared by Technical Committee CEN/TC 190 “Foundry technology”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document will supersede EN 1370:1996 and EN 12454:1998.

Within its programme of work, Technical Committee CEN/TC 190 requested CEN/TC 190/WG 11 "Surface inspection" to revise the following standards:

— EN 1370:1996, *Founding — Surface roughness inspection by visual tactile comparators*

and

— EN 12454:1998, *Founding — Visual examination of surface discontinuities — Steel sand castings.*

Annex A provides details of significant technical changes between this European Standard and the previous edition.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, 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 the United Kingdom.

Introduction

The surface roughness of a casting is influenced by the manufacturing process (moulding, grinding, finishing, etc.), the moulding materials used (sand, coating, etc.), the production equipment available and the alloy cast.

Depending on the applications of the casting, the surface requirements are related to mechanical loadings, appearance, surface treatment, etc.

Since cast surfaces do not exhibit the same cyclic character as machined surfaces it is difficult to evaluate their roughness using conventional mechanical, optical, or pneumatic devices. Other optical/electronic means are now available for measuring surface roughness of cast surfaces. For the ease of use, visual tactile comparators are preferred.

Moreover, in order to take into account the irregularities on as-cast surfaces, ground surfaces or other means of finishing of castings, comparators should have relatively large dimensions[1)] in order to make them more reliable and their results repeatable and consistent.

Two sets of comparators are in widespread use:

— "BNIF 359 Recommandation technique du Bureau de Normalisation des Industries de la Fonderie. Caractérisation d'états de surface des pièces moulées - Utilisation des échantillons types de 110 × 160 mm", available from Editions Techniques des Industries de la Fonderie, 44 avenue de la Division Leclerc, 92310 Sèvres, France [1];

— "SCRATA comparators for the definition of surface quality of steel and iron castings", ASTM A 802 Shorter Set, available from Castings Technology International, Advanced Manufacturing Park, Brunel Way, Rotherham, S60 5WG, South Yorkshire, United Kingdom [2].

A third set of comparators, for precision steel castings, is also available:

— “SCRATA surface comparators for the definition of surface texture of precision steel castings”, precision set, available from Castings Technology International, Advanced Manufacturing Park, Brunel Way, Rotherham, S60 5WG, South Yorkshire, United Kingdom [3].

This European Standard also specifies 8 levels of surface imperfections based on maximum dimensions to be detected by visual examination.

The SCRATA comparators shorter set [2], can also be used for the classification of surface discontinuities on steel and iron castings.

BNIF N°359 comparators can be used for all cast metals.

1) 100 mm × 150 mm for SCRATA comparators;
110 mm × 160 mm for BNIF comparators.

1 Scope

This European Standard specifies methods for the examination of surface condition (roughness and surface discontinuities) of castings.

This European Standard is applicable to all cast metals and all casting processes except die casting.

2 Comparators

The comparators are essentially positive replicas of actual casting surfaces: as-cast or after further fettling treatment such as shot blasted or ground.

Full size photographs of the comparators can be used to assist in making a rapid evaluation of the overall roughness of the comparators. These can give preliminary information for the appropriate selection of a moulding or finishing process.

It is emphasized however that the comparators, and not the photographs, shall be used to form the basis of an agreement between the manufacturer and the purchaser.

An overview and a comparison of the different categories and levels of the three sets of comparators are given in Tables 1, 2 and 4.

3 Requirements

3.1 General

When examination of surface conditions is required, the following shall be agreed by the time of ordering:

— the category and severity level required. More than one severity level can be specified for different surfaces of the same casting. This shall be clearly indicated on the drawing;

— any types of discontinuities which are unacceptable;

— the areas of the castings which are to be examined; these shall be clearly indicated on the drawing;

— number of castings to be examined;

— the manufacturing stage at which surfaces are to be examined.

NOTE 1 Guidelines for the specification of acceptance criteria for surface condition of iron castings are given in EN 1559-3 [4].

NOTE 2 General principles for visual examination are described in EN 13018 [5].

The examination shall be performed by trained personnel with satisfactory visual acuity.