EESTI STANDARD

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EVS-EN 1370:2011

Founding - Examination of surface condition



EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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ICS 17.040.20, 77.180

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EN 1370

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Supersedes EN 12454:1998, EN 1370:1996

English Version

Founding - Examination of surface condition

Fonderie - Contrôle de l'état de surface

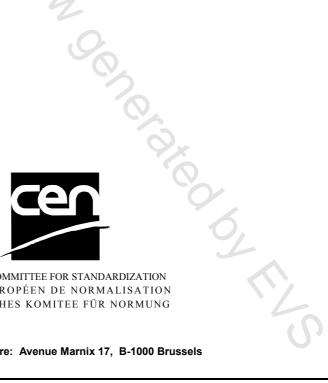
Gießereiwesen - Bewertung des Oberflächenzustandes

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION COMITÉ EUROPÉEN DE NORMALISATION EUROPÄISCHES KOMITEE FÜR NORMUNG

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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of an identical text or by endorsement, at the latest by June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.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 dimensions¹) 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.

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

^{1) 100} mm \times 150 mm for SCRATA comparators; 110 mm \times 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.