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Steel and iron castings — Visual testing of surface quality

Pièces moulées en acier ou en fonte — Contrôle visuel de l'état de surface

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative References **1**
3 Terms and Definitions **1**
4 Ordering information **1**
5 Test method **2**
6 Acceptance criteria **2**
7 Test report **3**
Annex A (informative) **4**
Bibliography **5**

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Foreword

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This document was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 11, *Steel castings*.

This third edition cancels and replaces the second edition (ISO 11971:2008), which has been technically revised. The main changes compared to the previous edition are as follows:

— “Normative References” added as new Clause 2 and “Terms and Definitions” added as new Clause 3; subsequent Clauses were renumbered

— Correction in Clause 5 (previously Clause 3) regarding the use of SCRATA comparators for iron castings

— Table 3 and Table 4 in the previous edition were moved to new Annex A

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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 equipment available and the alloy cast.

Since cast surfaces do not exhibit the same cyclic regularity as machined surfaces, it is difficult to evaluate their roughness using conventional mechanical, optical, or pneumatic devices.

The use of visual/tactile comparators is therefore preferred in these circumstances.

Moreover, in order to take account of the irregularities on as-cast surfaces, ground surfaces or other means of finishing of castings, comparators should have relatively large dimensions (greater than or equal to 15 000 mm^2) in order to make them more reliable and their results repeatable and consistent.

Two sets of comparators[1)] are in widespread use:

1. *SCRATA or CTI comparators for the definition of surface quality of steel castings*, available from Castings Technology International (CTI), Advanced Manufacturing Park, Brunel Way, Rotherham, South Yorkshire, United Kingdom, info@castingstechnology.com;

2. 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 CTIF, 44 avenue de la Division Leclerc, 92310 Sèvres, France, www.ctif-editions.com.

1) This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of these products.

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Steel and iron castings — Visual testing of surface quality

1 Scope

1.1 This document covers the acceptance criteria for the visual testing of the surface of steel and iron castings.

1.2 Acceptance levels utilize Bureau de Normalisation des Industries de la Fonderie (BNIF) and Steel Castings Research and Trade Association (SCRATA) or Casting Technology International (CTI) reference comparators for the visual determination of surface roughness and surface discontinuities described as follows:

— surface roughness;

— thermal dressing;

— mechanical dressing;

— non-metallic inclusions;

— gas porosity;

— fusion discontinuities;

— expansion discontinuities;

— metal inserts.

2 Normative References

There are no normative references in this document.

3 Terms and Definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Ordering information

The enquiry and order should specify the following information:

a) the casting areas where the surface is to be tested should be clearly indicated on the drawing or solid model;

b) the number of castings to be tested;

c) the acceptance level: more than one acceptance level may be specified for different surfaces of the same casting;

d) if any types of discontinuities are unacceptable.

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