

**Founding - Liquid penetrant testing- Part 1: Sand,
gravity die and low pressure die castings**

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 1371-1:2011 sisaldab Euroopa standardi EN 1371-1:2011 ingliskeelset teksti.	This Estonian standard EVS-EN 1371-1:2011 consists of the English text of the European standard EN 1371-1:2011.
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English Version

**Founding - Liquid penetrant testing- Part 1: Sand, gravity die
and low pressure die castings**

Fonderie - Contrôle par ressuage - Partie 1: Pièces
moulées en sable, en coquille, par gravité et basse
pression

Gießereiwesen - Eindringprüfung - Teil 1: Sand-,
Schwerkraftkokillen- und Niederdruckkokillengussstücke

This European Standard was approved by CEN on 15 October 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 1371-1:2011) 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of an identical text or by endorsement, at the latest by May 2012, and conflicting national standards shall be withdrawn at the latest by May 2012.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 supersedes EN 1371-1:1997.

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

- EN 1371-1, *Founding — Liquid penetrant testing — Part 1: Sand, gravity die and low pressure die castings*

This is one of two European Standards for liquid penetrant testing for castings.

The other standard is:

- EN 1371-2, *Founding — Liquid penetrant inspection — Part 2: Investment castings*

Annex G 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

This European Standard complements the general principles of liquid penetrant testing given in EN 571-1 for the additional requirements for castings.

Liquid penetrant testing as well as any other non-destructive examination method is part of a general or specific assessment of the quality of a casting to be agreed between the manufacturer and the purchaser at the time of acceptance of the order.

1 Scope

This European Standard specifies a liquid penetrant testing method for castings produced in conventional sand moulds, by gravity and low-pressure die casting, except for investment castings and high-pressure die castings.

This European Standard applies to all cast metals, except copper-tin and/or copper-tin-lead alloy castings, where copper is the major constituent.

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 473, *Non-destructive testing — Qualification and certification of NDT personnel — General principles*

EN 571-1, *Non destructive testing — Penetrant testing — Part 1: General principles*

EN ISO 3059, *Non-destructive testing — Penetrant testing and magnetic particle testing — Viewing conditions (ISO 3059:2001)*

3 Conditions for liquid penetrant testing

The manufacturing stage(s) when liquid penetrant testing is to be performed shall be clearly defined by agreement between the manufacturer and the purchaser by the time of ordering.

The methods detailed in this standard shall only apply to the agreed surfaces of castings and the percentage or number of castings to be checked.

For each agreed area of the casting to be inspected, the following shall be indicated:

- type of discontinuity;
- severity level.

This information enables the manufacturer to assess the additional testing and operations involved.

Sensitivity can differ depending on the method of liquid penetrant testing selected and surface condition. Therefore the liquid penetrants used and the method agreed shall fit to detect the minimum required severity level.

The type of discontinuity and the severity level can vary depending on the area of the casting inspected (see Table 1 and Table 2).

The conversion from the severity levels specified in EN 1371-1:1997, Table 3 [1], to the severity levels specified in Table 2 of the present edition is given in Table A.1.

4 Method of testing

4.1 Operating mode

Testing shall be carried out as described in EN 571-1. The characteristics of the penetrant materials shall be checked in accordance with specifications to be agreed between the manufacturer and the purchaser.