

Founding — Technical conditions of delivery

Part 3. Additional requirements for iron castings

The European Standard EN 1559-3 : 1997 has the status of a
British Standard

ICS 77.140.80

National foreword

This British Standard is the English language version of EN 1559-3 : 1997.
The UK participation in its preparation was entrusted to Technical Committee ISE/35, Cast iron, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 6, an inside back cover and a back cover.

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English version

Founding — Technical conditions of delivery — Part 3: Additional requirements for iron castings

Fonderie — Conditions techniques de fourniture —
Partie 3: Spécifications complémentaires pour les
pièces moulées en fonte

Gießereiwesen — Technische Lieferbedingungen —
Teil 3: Zusätzliche Anforderungen an
Eisengußstücke

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard 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of an identical text or by endorsement, at the latest by December 1997, and conflicting national standards shall be withdrawn at the latest by December 1997.

Within its programme of work, Technical Committee CEN/TC 190 requested CEN/TC 190/WG 1.11, Cast iron — Designation and special technical delivery conditions, to prepare the following standard:

EN 1559-3 *Founding — Technical conditions of delivery — Part 3: Additional requirements for iron castings*

This standard is one of a series of European Standards for technical delivery conditions for castings. The other standards in this series are:

- EN 1559-1 *Founding — Technical conditions of delivery — Part 1: General*
- prEN 1559-2 *Founding — Technical conditions of delivery — Part 2: Additional requirements for steel castings*
- prEN 1559-4 *Founding — Technical conditions of delivery — Part 4: Additional requirements for aluminium alloy castings*
- EN 1559-5 *Founding — Technical conditions of delivery — Part 5: Additional requirements for magnesium alloy castings*
- prEN 1559-6 *Founding — Technical conditions of delivery — Part 6: Additional requirements for zinc alloy castings*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

CEN/TC 190, Foundry Technology, has prepared a series of material standards covering the cast irons as grey, malleable, spheroidal graphite and austempered ductile cast iron etc. In order to assist manufacturers and purchasers to prepare proper contractual arrangements and prevent misunderstanding, CEN/TC 190 approved the preparation of a series of standards covering technical delivery conditions. These have been prepared as separate parts.

This European Standard covers the additional technical delivery conditions for all the cast iron materials, e.g. optional information, manufacturing process, welding operation, additional requirements regarding the condition of the casting, test methods.

This European Standard cannot be used alone for compiling a specification for ordering and supplying iron castings, but as a complement to EN 1559-1.

The symbol • against the clause reference indicates that the requirements of that clause of EN 1559-1 have to be met.

1 Scope

This Part of EN 1559 applies to castings made from all cast iron materials produced in sand or permanent moulds or by centrifugal casting, continuous casting or investment casting.

This Part specifies the additional technical delivery conditions for castings made from all cast iron materials.

This Part does not apply to iron products which are the subject of separate European product standards e.g. iron pipes, fittings and accessories for water pipelines which are subject of EN 545 and EN 598, prEN 877-1, prEN 877-2 and EN 969.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

- | | |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 545 | <i>Ductile iron pipes, fittings, accessories and their joints for water pipelines — Requirements and test methods</i> |
| EN 598 | <i>Ductile cast iron pipes, fittings, accessories and their joints for sewerage application — Requirements and test methods</i> |
| prEN 877-1 | <i>Cast iron pipes and fittings, their joints and accessories for the evacuation of water from buildings — Part 1: Technical specifications</i> |

- | | |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| prEN 877-2 | <i>Cast iron pipes and fittings, their joints and accessories for the evacuation of water from buildings — Part 2: Testing and quality control</i> |
| EN 969 | <i>Ductile iron pipes, fittings accessories and their joints for gas pipelines — Requirements and test methods</i> |
| EN 1559-1 | <i>Founding — Technical conditions of delivery — Part 1: General</i> |
| EN 1560 | <i>Founding — Designation system for cast iron — Material symbols and material numbers</i> |

NOTE. Informative references to documents used in the preparation of this standard, and cited at the appropriate places in the text, are listed in a bibliography, see annex A.

3 • Definitions

In addition to EN 1559-1, see the applicable material standard.

4 Information to be supplied by the purchaser

4.1 • Mandatory information

4.2 Optional information

Where applicable, the enquiry and order shall include other details, such as requirements for:

- a) an as-cast condition;

NOTE. Heat treatment of malleable cast iron or austempered ductile cast iron is a function of the material and is at the discretion of the manufacturer to achieve the desired mechanical properties.

- b) special or subsequent heat treatment if required (together with the heat-treatment conditions);
- c) heat treatment for stress relieving; it shall be agreed upon between the manufacturer and the purchaser;
- d) intentions to enamel, galvanize, plate, etc. the castings;
- e) sequence of machining and final heat treatment in the fabrication process (for austempered ductile iron castings);
- f) formation of test units (unless already defined by material specifications it shall be in accordance with 8.3.1).

4.3 • Drawings, patterns and tools

4.4 • Information on the mass

4.5 • Preliminary sample

4.6 • Initial sample

5 Designations

The designation(s) of cast iron material(s) shall be in accordance with EN 1560.

NOTE. Designations of cast iron materials are given in EN 1561, EN 1562, EN 1563, EN 1564, etc.

6 Manufacture

6.1 • Manufacturing process

6.2 Welding operations

6.2.1 • General

6.2.2 • *Production welding*

Production welding shall only be permitted according to a written agreement between the manufacturer and the purchaser.

Subject to an agreement between the manufacturer and the purchaser, the manufacturer may either undertake finishing welding generally and/or up to a certain limit without reference back to the purchaser or may be required to seek the purchaser's permission in specific cases.

Joint welds shall only be permitted according to a written agreement between the manufacturer and the purchaser.

NOTE. EN 1562 makes provision for a weldable grade: EN-GJMW-360-12 (EN-JM1020).

7 Requirements

7.1 • General

7.2 Material

7.2.1 • *Chemical composition*

7.2.2 • *Mechanical properties*

7.2.3 • *Other properties*

7.3 Casting

7.3.1 • *Chemical composition*

7.3.2 • *Mechanical properties*

7.3.3 • *Non-destructive testing*

Unless otherwise agreed, the standards referred to in EN 1559-1 shall be applied to non-destructive testing.

NOTE. Because some non-destructive testing methods are more suitable than others for cast iron castings they should be discussed under the technical and economical aspects before agreement between the manufacturer and the purchaser.

7.3.4 • *Condition of the casting*

7.3.5 • *Mass of the casting*

7.3.6 • *Additional requirements regarding the condition of the casting*

The microstructures to be examined, the tests to be applied and any other requirement to be determined shall be subject to an agreement between the manufacturer and the purchaser by the time of acceptance of the order.

8 Testing and documents on material testing

8.1 • General

8.2 • Inspection and testing

The requirements given in the relevant material standard shall also apply.

8.3 Test unit sampling

8.3.1 • *Formation of test units*

8.3.2 • *Size of test units*

The requirements given in the relevant material standard shall also apply.

8.3.3 • *Inspection frequency*

The requirements given in the relevant material standard shall also apply.

8.4 • Samples

The requirements given in the relevant material standard shall also apply.

8.5 • Test methods

The requirements given in the relevant material standard shall also apply.

8.6 • Invalidation of tests

8.7 • Retests

8.8 • Sorting and reprocessing

9 • Marking

10 • Packaging and surface protection

11 • Complaints

Annex A (informative)

Bibliography

In the preparation of this European Standard, use was made of a number of documents for reference purposes. These informative references are cited at the appropriate place in the text and the publications are listed hereafter.

- | | |
|---------|--------------------------------------------------|
| EN 1561 | <i>Founding — Grey cast irons</i> |
| EN 1562 | <i>Founding — Malleable cast irons</i> |
| EN 1563 | <i>Founding — Spheroidal graphite cast irons</i> |
| EN 1564 | <i>Founding — Austempered ductile cast irons</i> |

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