

# SVENSK STANDARD

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### Gjutstål för byggnadsändamål

### Steel castings for structural uses

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EUROPEAN STANDARD

**EN 10340**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2007

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ICS 77.140.80

English Version

## Steel castings for structural uses

Aciers moulés de construction

Stahlguss für das Bauwesen

This European Standard was approved by CEN on 18 August 2007.

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 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 Management Centre has the same status as the official versions.

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## **Foreword**

This document (EN 10340:2007) has been prepared by Technical Committee ECISS/TC 31 "Steel castings", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by April 2008, and conflicting national standards shall be withdrawn at the latest by July 2009.

This document has been prepared under a mandate M120 given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) "Construction Products Directive (89/106/EEC)".

For relationship with EU Directive(s) "Construction Products Directive (CPD)", see informative Annex ZA, which is an integral part of this document.

This document is intended to be read in conjunction with EN 1559-1:1997 and EN 1559-2:2000 and the referenced test Standards.

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.

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## EN 10340:2007 (E)

### Introduction

This draft European Standard retains the same format for clauses as EN 1559-1:1997 and EN 1559-2:2000. It is intended to be used in conjunction with these standards. Where no text is given under a paragraph heading, the corresponding paragraph of EN 1559-1:1997 and EN 1559-2:2000 applies.

The structure of this standard is as follows:

- clauses and subclauses preceded by ■ indicate no additional conditions to EN 1559-1<sup>1)</sup> and EN 1559-2<sup>1)</sup>;
- clauses and subclauses marked with a single dot ● indicate that the conditions shall be agreed at the time of enquiry and order in so far as such conditions do no conflict with the regulatory requirements of the European Union State or EFTA of destination;
- subclauses marked with two dots ●● indicate that conditions may be agreed at the time of enquiry and order (optional) in so far as such conditions do no conflict with the regulatory requirements of the European Union State or EFTA of destination;
- subclauses without dot marking are a requirement of this standard.

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1) When complementary information is given in a clause or subclause of this standard (versus the same clause or subclause of EN 1559-1:1997 or EN 1559-2:2000) it is preceded by "in addition to EN 1559".



## 1 Scope

This European Standard applies to steel castings:

- for structural uses in buildings and civil engineering works. Its uses include housing and service buildings, bridges, roads, pipe network.

In cases where castings are joined by welding by the founder, this European Standard applies.

This European Standard does not apply in cases where castings are welded:

- to wrought products (plates, tubes, forgings...);
- or by non founders.

## 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 1559-1:1997, *Founding - Technical conditions of delivery - Part 1: General*

EN 1559-2:2000, *Founding - Technical conditions of delivery - Part 2: Additional requirements for steel castings*

EN 10204, *Metallic products - Types of inspection documents*

EN ISO 8062-3, *Geometrical Product Specifications (GPS) - Dimensional and geometrical tolerances for moulded parts - Part 3: General dimensional and geometrical tolerances and machining allowances for castings (ISO 8062-3:2007)*

EN ISO 9001:2000, *Quality management systems - Requirements (ISO 9001:2000)*

EN ISO 11970, *Specification and approval of welding procedures for production welding of steel castings (ISO 11970:2001)*

## ■3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1559-1:1997 and EN 1559-2:2000 apply.

## ●4 Information to be supplied by the purchaser

In cases of grades with different mechanical properties relating to heat treatment conditions the manufacturer shall obtain from the purchaser the heat treatment symbol in accordance with Clause 5.

## EN 10340:2007 (E)

### 5 Designation

In addition to EN 1559-2:2000:

- for a steel grade which can be delivered to different strength levels, according to the heat treatment, a suffix shall be added in accordance with Table 2. For example: G24Mn6+QT1.

### 6 Manufacture

#### ■6.1 Manufacturing process

##### ■6.1.1 Melting

##### 6.1.2 Heat treatment

6.1.2.1 Unless otherwise agreed, the type of heat treatment represented by its symbol shall comply with Table 2. For some grades there are different options with different mechanical properties given in Table 2.

##### ■6.1.2.2

#### 6.2 Welding operations

##### ■6.2.1 General

##### 6.2.2 Production welding

6.2.2.1 Unless otherwise specified welding is permitted, provided that all welds shall comply with the same criteria for non-destructive testing as the relevant part of the casting and shall be carried out according to a qualified welding procedure (see EN ISO 11970).

6.2.2.2 Conditions for preheat, interpass and postweld heat-treatment related to welding operations are given in Annex A.

### 7 Requirements

#### ■7.1 General

#### 7.2 Material

##### 7.2.1 Chemical composition

In addition to EN 1559-2:2000:

- chemical composition determined by a cast analysis shall comply with the values given in Table 1;
- permissible deviations between the specified cast analysis and the check analysis on test blocks are indicated in Table 1 of EN 1559-2:2000.

## 7.2.2 Mechanical properties

In addition to EN 1559-2:2000:

**7.2.2.1** The mechanical properties shall comply with the values given in Table 2.

These values shall apply up to the maximum wall thickness given in Table 2. They shall be verified on test blocks of relevant thickness (see 8.4.1 of EN 1559-2:2000). In all cases the maximum relevant thickness of test blocks shall be limited to 150 mm.

**7.2.2.2** The yield strength values at room temperature correspond to 0,2 % proof strength ( $R_{p0,2}$ ).

●**7.2.2.3** In cases where two impact values are given, for different test temperatures in Table 2 the manufacturer shall ascertain from the purchaser which impact value is required. If there is no specified requirement, impact test shall be conducted at room temperature.

## ■7.2.3 Other properties

## 7.3 Casting

### ■7.3.1 Chemical composition

### 7.3.2 Mechanical properties

In addition to EN 1559-2:2000.

The values of yield and tensile strength given in Table 2 also apply to the casting itself up to the maximum relevant wall thickness stated.

### ■7.3.3 Non destructive testing

### ■7.3.4 Conditions of the casting

#### ■7.3.4.1 General (shape, dimensions and tolerances)

#### ■7.3.4.2 Fettling and finishing

### ■7.3.5 Mass of the casting

### ■7.3.6 Additional requirements regarding the condition of the casting

## ●●7.4 Corrosion behaviour

Durability is dependant on the chemical composition of the cast steel and can be improved by applying an appropriate surface treatment (e.g. specific coating, passivation).

Requirements for resistance to intergranular corrosion may be agreed between producer and purchaser for austenitic and austenitic-ferritic grades (see EN ISO 3651-2).