



SLOVENSKI STANDARD SIST EN 1560:2011

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Nadomešča:
SIST EN 1560:1998

Livarstvo - Sistem označevanja železove litine - Označevalni simboli in številke za material

Founding - Designation system for cast iron - Material symbols and material numbers

Gießereiweisen - Bezeichnungssystem für Gusseisen - Werkstoffkurzzeichen und Werkstoffnummern

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Fonderie - Système de désignation pour la fonte - Désignation symbolique et numérique

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Ta slovenski standard je istoveten z: EN 1560:2011

ICS:

01.075	Simboli za znake	Character symbols
77.080.10	Železo	Irons

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en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1560

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Supersedes EN 1560:1997

English Version

Founding - Designation system for cast iron - Material symbols and material numbers

Fonderie - Système de désignation pour la fonte -
Désignation symbolique et numérique

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This European Standard was approved by CEN on 15 January 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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 1560:2011) 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 August 2011, and conflicting national standards shall be withdrawn at the latest by August 2011.

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 1560:1997.

Annex C provides details of significant technical changes between this European Standard and the previous edition.

Within its programme of work, Technical Committee CEN/TC 190 requested CEN/TC 190/WG 1 “Technical conditions of delivery and cast iron designation” to revise EN 1560:1997.

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.

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EN 1560:2011 (E)

Introduction

Cast iron materials can be designated either by symbols or by numbers for all grades. The material number is based on principles and the structure set out in EN 10027-2.

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1 Scope

This European Standard establishes a material designation system either by symbols or by numbers for cast iron.

The designation system by symbols is applicable to:

- a) standardized cast iron materials (see 2.1);
- b) non-standardized cast iron materials (see 2.2).

The designation system by numbers is only applicable to standardized cast iron materials (see 2.1).

NOTE The use of a designation system by symbols does not necessarily imply that the material is standardized.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

standardized cast iron material

cast iron material which has been specified in a European Standard

2.2

non-standardized cast iron material

cast iron material which has not been specified in a European Standard, but is manufactured and/or used in CEN member countries

3 Designation of cast iron materials by symbols

3.1 General

There shall be only one designation by symbols for each cast iron material.

3.2 Material symbol structure

3.2.1 Overall structure

The designation by symbols shall occupy a maximum of six positions. There shall be no spaces between any of the used positions.

- Position 1: EN- (see 3.2.2);
- Position 2: Symbol for cast iron (see 3.2.3);
- Position 3: Symbol for graphite structure (see 3.2.4);
- Position 4: Symbol for microstructure or macrostructure (see 3.2.5);
- Position 5: Symbol for classification either by mechanical properties or by chemical composition (see 3.2.6);
- Position 6: Symbol for additional requirements (see 3.2.7).

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The overall structure of the designation system by symbols is shown in Annex A.

3.2.2 Position 1

The prefix EN- shall only be used for standardized materials.

NOTE If the European material standard (e.g. EN 1561) is presented in association with the material symbol (e.g. EN-GJL-150), then the prefix EN of the symbol designation may be omitted (e.g. EN 1561-GJL-150).

3.2.3 Position 2

The symbol GJ with G for cast and J for iron shall be used.

3.2.4 Position 3

If the graphite structure is to be specified, then the appropriate letter given in Table 1 shall be used.

Table 1 — Graphite structure

L	Lamellar
S	Spheroidal
M	Temper carbon (malleable) ^a
V	Vermicular
N	Free of graphite (hard), ledeburitic
Y	Special structure, identified in the relevant material standard
^a Including whiteheart malleable cast irons.	

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3.2.5 Position 4

If it is necessary to identify cast iron materials additionally by the microstructure or the macrostructure the supplementary letters given in Table 2 shall suffix the letters given in Table 1 as appropriate.

Table 2 — Microstructure or macrostructure

A	Austenite
R	Ausferrite
F	Ferrite
P	Pearlite
M	Martensite
L	Ledeburite
Q	Quenched
T	Quenched and tempered
B	Blackheart ^a
W	Whiteheart ^a
^a Only for malleable cast irons.	

3.2.6 Position 5

3.2.6.1 General

Position 5 shall be used to classify the material either by mechanical properties or by chemical composition. It shall be separated from the last used position by a hyphen.

3.2.6.2 Classification by mechanical properties

3.2.6.2.1 General

Cast iron materials classified by their mechanical properties shall be designated by figures relating to one of the following options:

- tensile strength, optionally with elongation followed by the letter C if the material standard permits the use of a sample cut from a casting (see Table 3) and/or impact energy followed by letters RT or LT relating to the test temperature (see Table 4);

Table 3 — Letter describing the production of the sample

C	Sample cut from a casting
(blank)	Cast sample

NOTE The former designation differentiated between separately cast samples and cast on samples. Cast sample now include separately cast samples, cast on sample and side-by-side cast sample thus reflecting the material properties in the relevant wall thickness of the casting.

Table 4 — Test temperature range used to determine the impact energy value

RT	Room temperature
LT	Low temperature

- hardness.

3.2.6.2.2 Tensile strength

The tensile strength shall be indicated by the appropriate minimum value of the grade in megapascals, e.g.:

EN-GJL-150C;

EN-GJL-150.

If required, the elongation shall be indicated by the appropriate minimum value of the grade in percent, which follows the indication of the minimum tensile strength. It shall be separated from the other symbols in position 5 by a hyphen, e.g.:

EN-GJS-350-22C;

EN-GJMW-450-7.

If impact energy is required the test temperature used to determine its value shall be indicated by the letters given in Table 4.