SLOVENSKI STANDARD
SIST EN 1559-5:2017

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Nadomešča:
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Livarstvo - Tehnični dobavni pogoji - 5. del: Dodatne zahteve za ulitke iz magnezijevih zlitin

Founding - Technical conditions of delivery - Part 5: Additional requirements for magnesium alloy castings

Gießereiwesen - Technische Lieferbedingungen - Teil 5: Zusätzliche Anforderungen an Gussstücke aus Magnesiumlegierungen

Fonderie - Conditions techniques de fourniture - Partie 5 : Spécifications complémentaires pour les pièces moulées en alliage de magnésium

Ta slovenski standard je istoveten z: **EN 1559-5:2017**

ICS:

77.150.20	Magnezijevi izdelki	Magnesium products

SIST EN 1559-5:2017 **en,fr,de**

EUROPEAN STANDARD

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ICS 77.150.20

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English Version

Founding - Technical conditions of delivery - Part 5: Additional requirements for magnesium alloy castings

Fonderie - Conditions techniques de fourniture - Partie 5 : Spécifications complémentaires pour les pièces moulées en alliages de magnésium

Gießereiwesen - Technische Lieferbedingungen - Teil 5: Zusätzliche Anforderungen an Gussstücke aus Magnesiumlegierungen

This European Standard was approved by CEN on 6 January 2017.

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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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 1559-5:2017) 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of an identical text or by endorsement, at the latest by September 2017, and conflicting national standards shall be withdrawn at the latest by September 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1559-5:1997.

Within its programme of work, Technical Committee CEN/TC 190 requested CEN/TC 190/WG 9 “Cast Magnesium” to revise the following standard:

EN 1559-5:1997, *Founding — Technical conditions of delivery — Part 5: Additional requirements for magnesium alloy castings*

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

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*

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

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

— EN 1559-4, *Founding — Technical conditions of delivery — Part 4: Additional requirements for aluminium alloy castings*

— EN 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, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

CEN/TC 190 “Foundry Technology” has prepared material standards covering magnesium alloy castings.

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 part of EN 1559 covers the additional technical delivery conditions for magnesium alloy castings, e.g. optional information, manufacturing process, additional requirements regarding the condition of the casting and test methods.

This part of EN 1559 cannot be used alone for compiling a specification for ordering and supplying magnesium alloy castings, but as a complement to EN 1559-1.

The clauses marked with a single dot ● indicate that the requirements of the same clauses of EN 1559-1 have to be met.

1 Scope

This part of EN 1559 specifies the additional technical delivery conditions for castings (see EN 1753) and cast anodes (see EN 12438) made from magnesium alloys.

This part of EN 1559 applies to magnesium alloy castings produced in sand or permanent moulds or by pressure die casting, centrifugal casting, continuous casting or investment casting.

This part of EN 1559 does not apply to ingots, bars, billets (or other shapes) for further reprocessing, such as re-melting or extrusion.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1370, *Founding - Examination of surface condition*

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

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

EN 1559-1:2011, *Founding - Technical conditions of delivery - Part 1: General*

EN 1753, *Magnesium and magnesium alloys - Magnesium alloy ingots and castings*

EN 1754, *Magnesium and magnesium alloys - Designation system for anodes, ingots and castings - Material symbols and material numbers*

EN 12438, *Magnesium and magnesium alloys - Magnesium alloys for cast anodes*

prEN 12681-1, *Founding - Radiographic testing - Part 1: Film techniques*[1]

prEN 12681-2, *Founding - Radiographic testing - Part 2: Techniques with digital detectors*[2]

EN ISO 3452-1, *Non-destructive testing - Penetrant testing - Part 1: General principles (ISO 3452-1)*

EN ISO 5579, *Non-destructive testing - Radiographic testing of metallic materials using film and X- or gamma rays - Basic rules (ISO 5579)*

3 ● Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1559-1 and in the applicable material standard apply.

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[1]) In development.

[2]) In development.

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;

b) special or subsequent heat treatment if required (together with the heat-treatment conditions);

c) 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 of cast magnesium alloys by material number or material symbol shall be in accordance with EN 1754. Both designations describe the magnesium alloys according to their chemical composition.

The designation shall be used on the drawings and in the order.

To identify the temper (heat treatment condition) and/or the casting process, the designation shall be supplemented with symbols preceded and separated from each other by a hyphen (-):

— for tempers as given in EN 1753;

— for casting processes as given in EN 1753 and EN 12438.

For examples of the use of these symbols in conjunction with either the material symbol or material number see Table 1.

Table 1 — Examples for the designation

Designation by		Explanation for the supplement
number	symbol	
3.5316	EN-MCMgAl9Zn1(A)	without supplement
3.5316-T4	EN-MCMgAl9Zn1(A)-T4	"-T4" specifies the temper (heat treatment condition)
3.5316-F-D	EN-MCMgAl9Zn1(A)-F-D	"-F-D" specifies the temper and the casting process
3.5130	EN-MAMgMn1	without supplement
3.5130-S	EN-MAMgMn1-S	"-S" specifies the casting process

6 Manufacture

6.1 ● Manufacturing process

7 Requirements

7.1 ● General

7.2 Material

7.2.1 ● Chemical composition

EN 1559-1 shall apply with the following addition:

Determination of elements not specified in the applicable material standard shall be carried out when agreed between the manufacturer and the purchaser by the time of acceptance of the order.

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 ● Outer and inner conditions (non-destructive testing)

7.3.3.1 The testing shall be performed according to the applicable European Standards as listed in Table 2. Other methods may be agreed between purchaser and manufacturer.

Table 2 — Test methods

Test method	Symbol	General principles	Test conditions
Liquid penetrant	PT	EN ISO 3452-1	EN 1371–1 EN 1371–2
Radiographic	RT	EN ISO 5579	prEN 12681–1 prEN 12681–2

7.3.3.2 ●

7.3.3.3 The selection of a non-destructive testing method is dependent on the thickness and material of the casting and the position, orientation and size of possible discontinuities in the areas to be tested.

Different acceptance criteria can be specified for different areas of the same casting. Moreover, for the same area of the casting different acceptance criteria can be specified according to the non-destructive test methods selected.

For all non-destructive testing methods, the acceptance criteria (discontinuity levels) can be graded with increasing number and/or extent of indications.

Unless specifically agreed, discontinuities revealed on cast surfaces which are to be machined, are not to be regarded as discontinuities, when these discontinuities are totally removed by machining.