



# SLOVENSKI STANDARD SIST EN 12421:2017

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Nadomešča:  
SIST EN 12421:2000

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## Magnezij in magnezijeve zlitine - Nelegirani magnezij

Magnesium and magnesium alloys - Unalloyed magnesium

Magnesium und Magnesiumlegierungen - Reinmagnesium

Magnésium et alliages de magnésium - Magnésium non allié

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### ICS:

77.120.20	Magnezij in magnezijeve zlitine	Magnesium and magnesium alloys
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**SIST EN 12421:2017**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

# EN 12421

March 2017

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Supersedes EN 12421:1998

English Version

## Magnesium and magnesium alloys - Unalloyed magnesium

Magnésium et alliages de magnésium - Magnésium non  
allié

Magnesium und Magnesiumlegierungen -  
Reinmagnesium

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

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.

CEN members are the national standards bodies of 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 United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (EN 12421:2017) 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 12421:1998.

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

EN 12421:1998, *Magnesium and magnesium alloys — Unalloyed magnesium*

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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

This European Standard classifies cast unalloyed magnesium into a number of grades suitable for the applications for which they might be used.

Four new grades of cast unalloyed magnesium, as specified in ISO 8287:2011 [3], has been added.

In this European Standard a new designation system by number, as established in EN 1754 [1], is given.

NOTE This designation system by number is based on the structure and rules of EN 10027-2 [2] and so corresponds with the European numbering system for steel and other materials.

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## 1 Scope

This European Standard specifies the grades and corresponding requirements for cast unalloyed magnesium.

This European Standard specifies the chemical composition, designation, testing, marking and inspection documentation.

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

EN ISO 80000-1:2013, *Quantities and units - Part 1: General (ISO 80000-1:2009 + Cor 1:2011)*

## 3 Terms and definitions

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

### 3.1

#### **unalloyed magnesium**

material where the minimum magnesium content is 99,0 % (mass fraction)

### 3.2

#### **cast unalloyed magnesium**

unalloyed magnesium processed in various moulds

## 4 Designations

The material shall be designated either by symbol or by number, as given in Table 1.

NOTE The comparison of EN 12421 grade designations with the designations from the ISO standard for unalloyed magnesium, ISO 8287 [3], is given in Annex A.

## 5 Order information

The following information shall be supplied by the purchaser:

- a) the number of this European Standard;
- b) the designation of the material;
- c) product shape;
- d) quantity (e.g. number, mass, etc.);
- e) any special requirements.

All requirements shall be agreed between the manufacturer and the purchaser by the time of acceptance of the order.

**EN 12421:2017 (E)****6 Manufacture**

The manufacturing process shall be left to the discretion of the manufacturer unless otherwise agreed at the time of ordering.

NOTE The manufacturing process covers all operations up to the delivery of the product.

**7 Requirements****7.1 Chemical composition**

The chemical composition of cast unalloyed magnesium shall be in accordance with the requirements as given in Table 1.

If not otherwise specified in the enquiry and order, the chemical composition of the cast unalloyed magnesium shall relate to that of the samples taken from the melt at the time of pouring.

**7.2 General condition of the product**

The product shall have a clean surface, in accordance with an agreement between the manufacturer and the purchaser, and shall be free from visible and internal imperfections to a level also agreed between the manufacturer and the purchaser.

**8 Sampling****8.1 General**

Samples for chemical analysis shall be made from the same material as that used to produce the material which they represent.

All samples shall be adequately marked to guarantee full traceability to the material which they represent.

The samples for the determination of the chemical composition shall be cast in a manner which ensures accurate results.

**8.2 Frequency and number of tests**

Samples, representative of the material, shall be produced at a frequency in accordance with the process quality assurance procedures adopted by the manufacturer or as agreed with the purchaser.

The quality assurance procedures for sampling should be based on appropriate and recognized statistical principles.

**9 Testing****9.1 Determination of the chemical composition**

The methods used to determine the chemical composition of the material shall be in accordance with standardized methods or validated procedures.

**9.2 Rounding of results of chemical analysis**

In recording the result obtained for any value specified in this European Standard, it shall be expressed to the same number of decimal places as the corresponding value in this European Standard. Rounding shall be carried out as specified in EN ISO 80000-1:2013, B.2 and B.3. In B.3, it is left to the discretion of the manufacturer as to whether to use Rule A or B, unless the use of one of the rules has been agreed at the time of acceptance of the order.



Table 1 — Chemical composition of cast unalloyed magnesium

Material designation		Chemical composition % (mass fraction)													
		Element	Al	Mn	Si	Fe	Cu	Ni	Pb	Sn	Na	Ca	Zn	Others each	Mg <sup>a</sup>
EN-MB99,5	3.5201	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,5
		max.	0,1	0,1	0,1	0,1	0,1	0,01	—	—	0,01	0,01	—	0,05	—
EN-MB99,80-A	3.5202	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,80
		max.	0,05	0,05	0,05	0,05	0,02	0,001	0,01	0,01	0,003	0,003	0,05	0,05	—
EN-MB99,80-B	3.5203	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,80
		max.	0,05	0,05	0,05	0,05	0,02	0,002	0,01	0,01	—	—	0,05	0,05	—
EN-MB99,80-C	3.5204	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,80
		max.	0,05	0,1	0,02	0,004	0,005	0,001	—	—	—	—	—	0,01	—
EN-MB99,90	3.5205	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,90
		max.	0,02	0,03	0,03	0,004	0,004	0,001	—	—	—	—	—	0,01	—
EN-MB99,95-A	3.5206	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,95
		max.	0,01	0,006	0,006	0,003	0,005	0,001	0,005	0,005	0,003	0,003	0,005	0,005	—
EN-MB99,95-B	3.5207	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,95
		max.	0,01	0,01	0,01	0,005	0,005	0,001	0,005	0,005	—	—	0,01	0,005	—
EN-MB99,98	3.5208	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,98
		max.	0,004	0,002	0,003	0,002	0,000 5	0,000 5	0,001	0,004	—	—	0,004	0,005	—
EN-MB99,99	3.5209	min.	—	—	—	—	—	—	—	—	—	—	—	—	99,99
		max.	0,002	0,002	0,003	0,002	0,000 3	0,000 3	0,002	0,002	—	—	0,003	0,003	—

NOTE The material designation is in accordance with EN 1754 [1].

<sup>a</sup> Balance