



BSI Standards Publication

## **Magnesium and magnesium alloys — Unalloyed magnesium — Chemical composition**

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## National foreword

This British Standard is the UK implementation of ISO 8287:2021. It supersedes BS ISO 8287:2011, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee NFE/35, Light metals and their alloys.

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

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# INTERNATIONAL STANDARD

**ISO**  
**8287**

Fourth edition  
2021-06-09

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## **Magnesium and magnesium alloys — Unalloyed magnesium — Chemical composition**

*Magnésium et alliages de magnésium — Magnésium non allié —  
Composition chimique*



Reference number  
ISO 8287:2021(E)



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## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 5, *Magnesium and alloys of cast or wrought magnesium*.

This fourth edition cancels and replaces the third edition (ISO 8287:2011), which has been technically revised.

The main changes compared with the previous edition are as follows:

- a) in the Introduction and [Clause 2](#), [EN 12421:1998](#) has been replaced by EN 12421:2017;
- b) four new grades of cast unalloyed magnesium have been added in [Table 1](#), namely ISO Mg99,95C, ISO Mg99,995A, ISO Mg99,995B and ISO Mg99,995C.

## Introduction

This document classifies commercially available cast unalloyed magnesium into a number of grades suitable for the applications for which they might be used. The grades listed in this document are identical to those in EN 12421:2017.





# Magnesium and magnesium alloys — Unalloyed magnesium — Chemical composition

## 1 Scope

This document specifies the chemical composition of cast unalloyed magnesium. It specifies classification, designation, testing rules, marking, packing, transportation, storage, and information subject to agreement between the manufacturer and the purchaser.

This document applies to cast unalloyed magnesium produced by the silicon-thermo process or molten salt electrolysis process.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

[ISO 80000-1:2009](#), *Quantities and units — Part 1: General*

EN 12421:2017, *Magnesium and magnesium alloys — Unalloyed magnesium*

## 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### **unalloyed magnesium**

magnesium with a minimum purity of 99,0 % mass fraction

### 3.2

#### **cast unalloyed magnesium**

*unalloyed magnesium* (3.1) cast in a variety of shapes

## 4 Information to be supplied by the purchaser

The enquiry and order shall define the product required and shall contain the following information:

- a) material designation;
- b) product shape;
- c) quantity (for example number, mass, etc.);
- d) any requirements for declarations of conformity;
- e) any additional requirements agreed between the manufacturer and the purchaser.

## 8 General condition of the product

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

## 9 Testing conditions

### 9.1 Inspection and acceptance

**9.1.1** The product quality certificate should be filled in by the supplier.

**9.1.2** The purchaser should retest the products received. If the results of the retest do not conform to this document or the purchase order, the purchaser should inform the supplier within 3 months from the date the products were received, and a solution should be reached between the supplier and the purchaser.

### 9.2 Batches

Pure magnesium should be submitted to testing in batches; each consignment should be from the same issue of the melting furnace products. No limits exist on the weight of each single consignment.

## 10 Testing

Analysis to ensure conformity with the chemical composition requirements given in [Table 1](#) shall be carried out on samples taken by the manufacturer and representative of the material delivered. Test method of analysis shall be subject to an agreement between the manufacturer and the purchaser.

## 11 Rounding of results

In recording the results of the chemical analysis, the result obtained for any property specified in this document shall be expressed to the same number of decimal places as the corresponding value in this document. Rounding shall be carried out as specified in [ISO 80000-1:2009](#), 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.

## 12 Declaration of conformity and inspection documents

If agreed between the manufacturer and the purchaser or when specified on the order, the manufacturer shall provide a declaration of product conformity or an inspection document listing the results of the analysis of the chemical elements given in [Table 1](#), and of any other element which may have been previously agreed upon.

## 13 Marking

Unless otherwise agreed, each product, or bundle of products, shall be clearly marked with the following:

- manufacturer's identification, molten furnace number, and mark of test on each ingot;
- each bundle should have a bright colour, waterproofing, a label that does not fall off easily and on which is clearly marked the smelting number, bunch of numbers, net weight, number of ingots, designation, manufacturing date, place of origin, and manufacturer's logo.

The method of marking is left to the discretion of the manufacturer. Markings shall be indelible and shall not be a source of contamination.

## 14 Packing

Unless otherwise agreed by the supplier and the purchaser, the pure magnesium ingot should

- a) be packed on a pure magnesium metal plate or a dry wooden plate,
- b) be covered and wrapped by a whole plastic film, then enlaced by PVC belts,
- c) contain pure magnesium ingots from a maximum of two smelting numbers in each bunch, and
- d) contain  $1\,000\text{ kg} \pm 50\text{ kg}$  or  $500\text{ kg} \pm 20\text{ kg}$  of pure magnesium ingots in each bunch.

## 15 Transportation

The pure magnesium ingots should use rainproof vehicles or vehicles equipped with rainproof applications or clean containers for the transportation. Special care should be taken when loading and unloading during rain and when the ingots are dripping wet.

## 16 Storage

The pure magnesium ingots should be stored in a dry, clean, ventilated warehouse which contains no corrosive medium.

## 17 Quality certificate

Each batch of products should have a quality certificate attached, indicating the following:

- a) supplier's name;
- b) designation;
- c) batch number;
- d) net weight and ingot number;
- e) the analysis and test results;
- f) the reference number of this document, i.e. ISO 8287.

## 18 Complaints

In the event of any product complaints, the manufacturer shall examine the validity of the complaint within a reasonable time.

Complaints may only be raised against defective products if the defect impairs their processing and use to a more than negligible extent. This shall apply unless otherwise agreed at the time of acceptance of the order.

The purchaser shall give the manufacturer the opportunity to judge whether the complaints are justified.



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