

Magnesium and magnesium alloys — Magnesium alloy ingots and castings

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British Standard

ICS 77.150.20

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Summary of pages

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English version

Magnesium and magnesium alloys — Magnesium alloy ingots and castings

Magnésium et alliages de magnésium —
Lingots et pièces moulées en alliages
de magnésium

Magnesium und Magnesiumlegierungen —
Blockmetalle und Gußstücke aus
Magnesiumlegierungen

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CEN

European Committee for Standardization
Comité Européen de Normalisation
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Foreword

This European Standard 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of an identical text or by endorsement, at the latest by December 1997, and conflicting national standards shall be withdrawn at the latest by December 1997.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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

This European Standard classifies the commercially available magnesium alloys into a number of grades suitable for the applications to which they might be put.

Some of the alloys referenced in this standard can be the subject of a patent or of patent applications and their listing herein is not to be construed in any way as the granting of a licence under such patent rights.

1 Scope

This European Standard specifies the chemical composition of magnesium alloy ingots. It also specifies the chemical composition of magnesium alloy castings. It also specifies the mechanical properties of separately cast samples of these alloys (see clause 6). By agreement, it also specifies the mechanical properties of magnesium alloy castings determined from samples cut from a casting.

2 Normative references

This standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 1559-5	<i>Founding — Technical conditions of delivery — Part 5: Additional requirements for magnesium alloy castings</i>
EN 10002-1	<i>Metallic materials — Tensile testing — Part 1: Method of test (at ambient temperature)</i>
EN 10003-1	<i>Metallic materials — Brinell hardness test — Part 1: Test method</i>
ISO 31-0 : 1992	<i>Quantities and units — Part 0: General principles</i>

NOTE. Informative references to documents used in the preparation of this standard, and cited at the appropriate places in the text, are listed in a bibliography, see annex A.

3 Designation

3.1 Material

The material shall be designated either by symbol or by number as given in tables 1 to 5.

NOTE 1. The material number designation and the material symbol designation are in accordance with EN 1754.

NOTE 2. A list of international, national and former national European designations corresponding to the European designations is given in annex B.

NOTE 3. The materials for aerospace applications referred to in European Standards prepared by AECMA (Association Européenne des Constructeurs de Matériel Aéronautique) have different designations.

3.2 Temper designation

The following symbols for temper designation shall be used:

- F as cast;
- T4 solution heat-treated and naturally aged;
- T5 as cast and artificially aged;
- T6 solution heat-treated and artificially aged.

NOTE. Examples of the use of these designations are given in EN 1559-5.

3.3 Casting process designation

The following symbols shall be used for the designation of the different casting processes:

- S sand casting;
- K permanent mould casting;
- D pressure die casting;
- L investment casting.

NOTE. Examples of the use of these designations are given in EN 1559-5.

4 Requirements

4.1 Chemical composition

The chemical composition of magnesium alloy ingots shall conform to the requirements for the appropriate material given in table 1.

The chemical composition of magnesium alloy castings shall conform to the requirements for the appropriate material given in table 2.

NOTE. For additional information regarding the manganese and iron contents see annex C.

4.2 Mechanical properties of castings

The mechanical properties obtained from test pieces prepared from separately cast samples for sand castings and permanent mould castings shall meet the requirements given in tables 3 and 4. As appropriate, the tests shall be carried out in accordance with clause 7.

NOTE 1. Mechanical properties obtained from test pieces prepared from separately cast samples for investment castings are not specified as experience is limited. As a general rule they are similar to those for permanent mould castings.

NOTE 2. The values obtained from test pieces cut from castings can differ from the minimum values specified in the tables because of variation in structure arising from differences in section thickness and soundness.

NOTE 3. The mechanical properties obtained from test pieces prepared from separately cast samples for pressure die castings are very dependent upon injection parameters. Therefore, the properties given in table 5 are for guidance only.

The Brinell hardness test shall be carried out on porosity free areas of castings or on a test piece which has not been stressed.

4.3 Frequency of testing

The frequency of testing shall be in accordance with EN 1559-5.