

BS EN 1754:2015



BSI Standards Publication

Magnesium and magnesium alloys — Designation system for anodes, ingots and castings — Material symbols and material numbers

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee ISE/111, Steel Castings and Forgings.

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

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EUROPEAN STANDARD

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August 2015

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English Version

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

Magnésium et alliages de magnésium - Système de désignation pour les anodes, lingots et pièces moulées - Désignation symbolique et numérique

Magnesium und Magnesiumlegierungen - Bezeichnungssystem für Anoden, Blockmetalle und Gussstücke - Werkstoffkurzzeichen und Werkstoffnummern

This European Standard was approved by CEN on 27 June 2015.

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Contents		Page
European foreword		3
Introduction		4
1	Scope	5
2	Terms and definitions	5
3	Designation by numbers	5
3.1	General	5
3.2	Structure of the designation	5
4	Designation by symbols	6
4.1	General	6
4.2	Structure of the designation	7
Annex A (normative) Overall structure for designation by numbers		9
Annex B (normative) Overall structure for designation by symbols		10
Annex C (informative) Significant technical changes between this European Standard and the previous edition		11
Bibliography		12

European foreword

This document (EN 1754:2015) 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of an identical text or by endorsement, at the latest by February 2016 and conflicting national standards shall be withdrawn at the latest by February 2016.

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 1754:1997.

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 material designation” to revise EN 1754:1997, *Magnesium and magnesium alloys - Magnesium and magnesium alloy anodes, ingots and castings - Designation system*.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Magnesium and magnesium alloy anodes, ingots and castings can be designated either by numbers or by symbols for all grades.

In this revised standard, a designation system by number, similar to that described in EN 10027-2 [1], is specified.

1 Scope

This European Standard specifies a material designation system for magnesium and magnesium alloys either by numbers or by symbols for castings including anodes and ingots intended for remelting.

The designation system by numbers is only applicable to standardized magnesium and magnesium alloys (see 2.1).

The designation system by symbols is applicable to

- a) standardized magnesium and magnesium alloys (see 2.1);
- b) non-standardized magnesium and magnesium alloys (see 2.2).

NOTE 1 The standardized designation by symbols does not necessarily imply that the material is standardized.

NOTE 2 Magnesium and magnesium alloys for aerospace applications referred to in European Standards prepared by AECMA (fr: Association Européenne des Constructeurs de Matériel Aérospatial) have different designations.

2 Terms and definitions

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

2.1

standardized magnesium and magnesium alloy

magnesium and magnesium alloy specified in a European Standard

2.2

non-standardized magnesium and magnesium alloy

magnesium and magnesium alloy not specified in a European Standard

3 Designation by numbers

3.1 General

There shall be only one designation by number for each magnesium grade or each magnesium alloy.

The designation system by numbers is based on the principles and the structure as set out in EN 10027-2 [1].

3.2 Structure of the designation

3.2.1 Overall structure

The designation shall comprise six characters.

The positions shall be in accordance with Table 1:

Table 1 — Number structure

Position	1	2	3	4	5	6
Character	n	.	n	n	n	n
n: Arabic number						

The whole structure of the designation by numbers is shown in Table A.1.

3.2.2 Positions 1, 2 and 3

Position 1 is the main group number, which is “3” for non-ferrous light metals, followed by a “dot” in position 2.

Position 3 is the material group number, which is “5” for magnesium.

3.2.3 Position 4

To specify the product form, the appropriate number given in Table 2 shall be used.

Table 2 — Product form

Product form	Number
Anode	1
Ingot	2
Casting	3

3.2.4 Position 5

To specify the alloy group the appropriate number given in Table 3 shall be used.

Table 3 — Alloy group

Alloy group	Number
Mg	0
MgAl, MgAlZn	1
MgAlMn, MgAlSi, MgAlRE ^a	2
MgMn, MgZnCu	3
MgZr, MgZnZr, MgZnREZr ^a	4
MgREAgZr ^a , MgREGdZr ^a	5
MgYREZr ^a	6
MgZnThZr	7
Vacant	8
Vacant	9
^a RE: Rare earth elements.	

3.2.5 Position 6

A 1-digit character from “0” to “9” representing an individual material shall be used.

These numbers will be allocated by CEN/TC 190.

4 Designation by symbols

4.1 General

There shall be only one designation by symbols for each magnesium grade or each magnesium alloy.

4.2 Structure of the designation

4.2.1 Overall structure

The designation by symbols is based on chemical symbols, usually followed by numbers indicating the minimum or nominal content of each considered element.

There shall be no spaces between any of the used positions.

- Position 1: Prefix “EN-” (see 4.2.2);
- Position 2: Symbol “M” for magnesium;
- Position 3: Symbol for “product form” (see 4.2.3);
- Position 4: Symbol “Mg”;
- A coded designation for classification by chemical composition (see 4.2.4).

The whole structure of the designation system by symbols is shown in Table B.1.

4.2.2 Position 1

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

NOTE If the European material standard (e.g. EN 1753 [2]) is presented in association with the material symbol (e.g. EN-MCMgAl2Mn), then the prefix “EN” of the symbol designation can be omitted (e.g. EN 1753-MCMgAl2Mn).

4.2.3 Position 3

To specify the product form, the appropriate symbol given in Table 4 shall be used.

Table 4 — Product form

Product form	Symbol
Anode	A
Ingot	B
Casting	C

4.2.4 Coded designation

4.2.4.1 Unalloyed magnesium

The coded designation for unalloyed magnesium consists of the chemical symbol “Mg” for magnesium (position 4) followed by its minimum mass fraction in percent expressed to one or two decimal places, as applicable.

EXAMPLE EN-MBMg99,75

4.2.4.2 Magnesium alloys

Magnesium alloys shall be code designated by Mg (position 4) followed by the chemical symbols of the main element or elements. These symbols are usually followed by figures which express the mass fraction of the element concerned in percent.

When several alloying elements are required in the designation, they shall be arranged in decreasing order of mass fraction in percent. The number of alloying elements in the designation shall not be greater than 4.

EXAMPLE 1 EN-MCMgAl8Zn1

EXAMPLE 2 EN-MBMgAl5Mn

Annex A (normative)

Overall structure for designation by numbers

This annex shows the overall structure of the material numbers designation in accordance with Clause 3.

All of the positions are mandatory.

Table A.1 — Overall structure for the designation by numbers

Position 1 and 2		Position 3		Position 4		Position 5		Position 6	
Main group		Material group		Product form		Alloy group		Individual material	
name	number	name	number	name	number	symbol	number	numbering	number
Non-ferrous light metals	3.	Magnesium	5	Anode Ingot Casting	1 2 3	Mg	0	numbers to be allocated by CEN/TC 190	0 to 9
						MgAl, MgAlZn	1		
						MgAlMn, MgAlSi, MgAlRE ^a	2		
						MgMn, MgZnCu	3		
						MgZr, MgZnZr, MgZnREZr ^a	4		
						MgREAgZr ^a , MgREGdZr ^a	5		
						MgYREZr ^a	6		
						MgZnThZr	7		
						Vacant	8		
						Vacant	9		

^a RE: Rare earth elements.

Annex B (normative)

Overall structure for designation by symbols

This annex shows the overall structure of the material symbols designation according to Clause 4.

Table B.1 — Overall structure for the designation by symbols

Position 1 mandatory except for 4.2.2 Prefix	Position 2 mandatory Type of material		Position 3 mandatory Product form		Position 4 mandatory Main element		Position 5 etc. Chemical composition	
	name	symbol	designation	symbol	name	symbol	material	symbol/ number
EN-	Magnesium	M	Anode Ingot Casting	A B C	Magnesium	Mg	Unalloyed magnesium: Minimum mass fraction in percent expressed to one or two decimal places.	e.g. 99,75
							Mg-alloys: Symbols of the main element or elements, maximum 4, usually followed by figures which express the mass fraction of the element concerned in percent.	e.g. MgAl8Zn1 MgRE3Zn2Zr

Annex C
(informative)

**Significant technical changes between this European Standard
and the previous edition**

Table C.1 — Significant technical changes between this European Standard and the previous edition

Clause/Paragraph/ Table/Figure	Change
Title of the standard	Changed to: “Magnesium and magnesium alloys — Designation system for anodes, ingots and castings — Material symbols and material numbers”
Clause 3	New system, based on the principles and the structure set out in EN 10027-2, for the designation of magnesium and magnesium alloys by numbers introduced.
Table 3 and Table A.1	Seven new alloy groups added: MgAl, MgAlRE, MgMn, MgZr, MgZnZr, MgREGdZr and MgZnThZr.
NOTE The technical changes referred to include the significant technical changes from the revised EN but are not an exhaustive list of all modifications from the previous version.	

Bibliography

- [1] EN 10027-2, *Designation systems for steels - Part 2: Numerical system*
- [2] EN 1753, *Magnesium and magnesium alloys - Magnesium alloy ingots and castings*

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