



Aluminium and aluminium alloys — Designation of alloyed aluminium ingots for remelting, master alloys and castings —

Part 1: Numerical designation system

The European Standard EN 1780-1:2002 has the status of a
British Standard

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National foreword

This British Standard is the official English language version of EN 1780-1:2002. It supersedes BS EN 1780-1:1997 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee NFE/35, Light metals and their alloys, which has the responsibility to:

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Aluminium and aluminium alloys - Designation of alloyed
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1: Numerical designation system

Aluminium et alliages d'aluminium - Système de
désignation applicable aux lingots pour refusion en
aluminium allié, aux alliages-mères et aux produits moulés
- Partie 1: Système de désignation numérique

Aluminium und Aluminiumlegierungen - Bezeichnung von
legiertem Aluminium in Masseln, Vorlegierungen und
Gussstücken - Teil 1: Numerisches Bezeichnungssystem

This European Standard was approved by CEN on 2 September 2002.

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Foreword

This document (EN 1780-1:2002) has been prepared by Technical Committee CEN /TC 132, "Aluminium and aluminium alloys", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by April 2003, and conflicting national standards shall be withdrawn at the latest by April 2003.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 1 "*Liquid metal, unalloyed and alloyed ingots*" to prepare the following standard:

EN 1780-1, *Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings – Part 1 : Numerical designation system.*

This document supersedes EN 1780-1:1996 "*Aluminium and aluminium alloys – Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings – Part 1 : Numerical designation system*".

In this revised edition, unalloyed aluminium ingots have been removed from the scope and provisions for unalloyed aluminium ingots have been deleted.

The provisions about the writing rules of unalloyed aluminium have been transferred into the revised version of EN 576.

This European Standard EN 1780, "*Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings*", comprises of the following parts:

- *Part 1 : Numerical designation system*
- *Part 2 : Chemical symbol based designation system*
- *Part 3 : Writing rules for chemical composition*

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies a five-figure numerical designation system for aluminium alloys and master alloys as specified in the relevant European Standards. It applies to ingots for remelting and to castings for all applications including aerospace.

A designation system for unalloyed aluminium is specified in EN 576.

An alternative chemical symbol based designation system is specified in EN 1780-2. The writing rules for chemical composition are specified in EN 1780-3.

2 Normative references

This European 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 European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 2032-1, *Aerospace series – Metallic materials – Part 1 : Conventional designation.*

3 Basis of codification

The designation shall be constituted successively by :

- a) the prefix EN followed by a blank space ;
- b) the letter A representing aluminium ;
- c) a letter representing the form of the product :
 - the letter B representing alloyed aluminium ingots for remelting ; or
 - C representing castings ; or
 - M representing master alloys ;
- d) a hyphen ;
- e) five figures representing the alloy composition limits.

EXAMPLE 1 EN AB-44000 EXAMPLE 2 EN AM-91400

The prefix letters of alloys for aerospace applications are different from those above and are specified in EN 2032-1.

4 Five-figure designation system

4.1 Aluminium alloys ingot and castings

For a given alloy, ingots and castings shall have the same numerical designation.

The first of the five figures in the designation shall indicate the major alloying elements as follows :

- copper: 2XXXX ;

- silicon : 4XXXX ;
- magnesium : 5XXXX ;
- zinc : 7XXXX.

The second of the five figures in the designation shall indicate the alloy group as follows :

- 2 $\boxed{1}$ XXX: Al Cu ;
- 4 $\boxed{1}$ XXX : Al SiMgTi ;
- 4 $\boxed{2}$ XXX: Al Si7Mg ;
- 4 $\boxed{3}$ XXX : Al Si10Mg ;
- 4 $\boxed{4}$ XXX : Al Si ;
- 4 $\boxed{5}$ XXX : Al Si5Cu ;
- 4 $\boxed{6}$ XXX : Al Si9Cu ;
- 4 $\boxed{7}$ XXX : Al Si(Cu) ;
- 4 $\boxed{8}$ XXX: Al SiCuNiMg ;
- 5 $\boxed{1}$ XXX : Al Mg ;
- 7 $\boxed{1}$ XXX : Al ZnMg.

The third figure is arbitrary.

The fourth figure is generally 0.

The fifth figure shall be 0, except for aerospace applications.

4.2 Master alloys

The first of the five figures in the designation system shall be the number 9.

The second and third figures shall represent the atomic number of the main element.

EXAMPLE 1 05 for boron ;

EXAMPLE 2 14 for silicon ;

EXAMPLE 3 29 for copper.

The last two figures shall be chronological numbers, but for the fifth figure :

- an even figure is reserved for a master alloy with low level of impurities ; or
- an odd figure is reserved for a master alloy with high level of impurities.

Bibliography

- [1] EN 576, *Aluminium and aluminium alloys – Unalloyed aluminium ingots for remelting – Specifications.*
- [2] EN 1780-2, *Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings – Part 2 : Chemical symbol based designation system.*
- [3] EN 1780-3, *Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings – Part 3 : Writing rules for chemical composition.*

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