



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

Part 3: Writing rules for chemical composition

The European Standard EN 1780-3:2002 has the status of a
British Standard

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National foreword

This British Standard is the official English language version of EN 1780-3:2002. It supersedes BS EN 1780-3:1997 which is withdrawn.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 aluminium ingots for remelting, master alloys and castings - Part 3: Writing rules for chemical composition

Aluminium et alliages d'aluminium - Système de désignation applicable aux lingots pour refusion en aluminium allié, aux alliages-mères et aux produits moulés
- Partie 3: Règles d'écriture pour la composition chimique

Aluminium und Aluminiumlegierungen - Bezeichnung von legiertem Aluminium in Masseln, Vorlegierungen und Gussstücken - Teil 3: Schreibregeln für die chemische Zusammensetzung

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

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Foreword

This document (EN 1780-3:2002) 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of an identical text or by endorsement, at the latest by April 2003, and conflicting national standards shall be withdrawn at the latest by April 2003.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 1780-3, *Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings – Part 3 : Writing rules for chemical composition*

This document supersedes EN 1780-3:1996 "*Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings – Part 3 : Writing rules for chemical composition*"

The difference to the former version is that unalloyed aluminium is removed from the scope and provisions dealing with unalloyed aluminium are 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 the writing rules for chemical composition of alloyed aluminium ingots for remelting, master alloys and castings.

Writing rules for unalloyed aluminium are specified in EN 576.

The five-figure numerical and the chemical symbol based designation systems of materials are specified in EN 1780-1 and EN 1780-2, respectively.

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 575, *Aluminium and aluminium alloys – Master alloys produced by melting – Specifications.*

EN 1676, *Aluminium and aluminium alloys – Alloyed ingots for remelting – Specifications.*

EN 1706, *Aluminium and aluminium alloys – Castings – Chemical composition and mechanical properties.*

3 Chemical composition limits

The chemical composition limits are specified in EN 575, EN 1676 and EN 1706.

4 Writing rules

Standard limits for alloying elements and impurities are generally expressed in percentage by mass to the following places (except in certain cases as specified in the standards listed in clause 3) :

- a) less than 0,001 %..... 0,000X ;
- b) 0,001 % through less than 0,01 % 0,00X ;
- c) 0,01 % through less than 0,10 % 0,0X ;
- d) 0,10 % through 0,55 %..... 0,XX ;
- e) over 0,55% 0,X ; X,X ; XX,X.

5 Alloy designations

Both the five figure based designations and the chemical symbol based designations are used in the tables appended to the specific European Standards (see clause 3).

6 Sequence of elements for the indication of the chemical composition

6.1 Alloyed aluminium ingots for remelting and castings

The limits for the alloying elements and impurities for alloyed aluminium ingots for remelting and castings shall be expressed in the following sequence: Silicon, Iron, Copper, Manganese, Magnesium, Chromium, Nickel, Zinc, Lead, Tin, Titanium, other elements each, other elements total, Aluminium.

6.2 Master alloys

The limits for the alloying elements and impurities for master alloys shall be expressed in the following sequence: Silicon, Iron, Copper, Manganese, Magnesium, Chromium, Nickel, Zinc, ..., Titanium, other elements each, other elements total, Aluminium. The limits for additional alloying elements and impurities shall be inserted in alphabetical order of their chemical symbols between zinc and titanium, or specified in footnotes.

Aluminium shall be specified as a remainder for aluminium alloys.

7 Rounding rules for determination of compliance

In recording chemical analysis test results, the number representing the result for any element specified in this standard shall be expressed to the same number of decimal places as the corresponding number in the reference standard.

The following rounding rules shall be used for determination of compliance with this standard :

- a) when the figure immediately after the last figure to be retained is less than 5, the last figure to be retained remains unchanged ;
- b) when the figure immediately after the last figure to be retained is greater than 5, or equal to 5 and followed by at least one figure other than zero, the last figure to be retained is increased by one ;
- c) when the figure immediately after the last figure to be retained is equal to 5 and followed by zeros only, the last figure to be retained remains unchanged if even and is increased by one if odd.

Bibliography

- [1] EN 576, *Aluminium and aluminium alloys – Unalloyed aluminium ingots for remelting – Specifications.*
- [2] EN 1780-1, *Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings – Part 1 : Numerical designation system.*
- [3] 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.*

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