



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

Part 2: Chemical symbol based designation system

The European Standard EN 1780-2:2002 has the status of a
British Standard

ICS 77.150.10

National foreword

This British Standard is the official English language version of EN 1780-2:2002. It supersedes BS EN 1780-2:1997 which is withdrawn.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:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard, having been prepared under the direction of the Engineering Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 30 October 2002

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 8, an inside back cover and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

© BSI 30 October 2002

ISBN 0 580 40655 5

English version

Aluminium and aluminium alloys - Designation of alloyed aluminium ingots for remelting, master alloys and castings - Part 2: Chemical symbol based 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 2: Système de désignation basé sur les symboles chimiques

Aluminium und Aluminiumlegierungen - Bezeichnung von legiertem Aluminium in Masseln, Vorlegierungen und Gussstücken - Teil 2: Bezeichnungssystem mit chemischen Symbolen

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

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	page
1 Scope	4
2 Normative references	4
3 Basis of codification	4
4 Rules for the coded designation of aluminium alloys and master alloys.....	5
4.1 General.....	5
4.2 Rules for distinguishing between two alloys of similar composition	5
4.3 Special application for master alloys	6
Annex A (normative) International chemical symbols	7
Bibliography	8

Foreword

This document (EN 1780-2:2002) 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 1780-2, *Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings – Part 2 : Chemical symbol based designation system.*

This document supersedes EN 1780-2:1996 "*Aluminium and aluminium alloys – Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings – Part 2 : Chemical symbol based 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 has 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*

Annex A is normative.

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 chemical symbol based designation system for aluminium alloys and master alloys as specified in the relevant European Standards. It applies to ingots for remelting and to castings.

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

An alternative numerical designation system is specified in EN 1780-1. 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 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.*

EN 1780-3:2002, *Aluminium and aluminium alloys – Designation of alloyed aluminium ingots for remelting, master alloys and castings – Part 3 : Writing rules for chemical composition.*

3 Basis of codification

The designation of aluminium alloys and master alloys shall be based on their chemical symbols, usually followed by numbers indicating the nominal content of the considered alloying element.

The chemical symbols used shall be those of the international nomenclature (see Annex A).

The numbers or figures indicating the nominal content of the alloying element in question shall be based on the chemical composition limits specified in clause 3 of EN 1780-3:2002.

Preferably all designations complying with this codification should be put within square brackets, following the five figure designation. If only the chemical symbol based designation is used, then it shall have the prefix EN, followed by a blank space, then the letter A representing aluminium and the letter B representing ingots for remelting, or the letter C representing castings, or the letter M representing master alloys.

This letter (B, C or M) shall be separated from the following designation by a hyphen.

EXAMPLE EN AB-45400 [Al Si5Cu3] or EN AB-AI Si5Cu3

The designations currently in use and the corresponding chemical compositions limits are specified in EN 575, EN 1676 and EN 1706.

Assignments or revisions of designations shall be approved by Technical Committee CEN/TC 132.

4 Rules for the coded designation of aluminium alloys and master alloys

4.1 General

An alloy shall be designated by the symbol Al, followed by the symbols of the main element or elements. These symbols are usually followed by numbers which express the mass percent contents of the considered elements, in accordance with the rules shown in 4.2. The symbol Al shall be separated by a blank space from the remainder of the designation.

When several alloying elements are deemed to be required in the designation, they shall be arranged in order of decreasing nominal contents.

EXAMPLE 1 EN AB-Al Si5Cu3

If these contents are equal, the alloying elements shall be arranged in the alphabetical order of the symbols, as specified in Annex A.

EXAMPLE 2 EN AB-Al Si12CuMgNi

The chemical symbols for alloying elements shall be restricted to a maximum of four elements.

EXAMPLE 3 EN AB-Al Si12CuMgNi

EXAMPLE 4 EN AC-Al Si12CuMgNi

EXAMPLE 5 EN AM-Al Sr10Ti1B0,2

4.2 Rules for distinguishing between two alloys of similar composition

4.2.1 General

The simplest possible designation shall be used.

In the case of alloys with similar compositions, the following additional designation shall be used for distinguishing between alloys in decreasing priority:

4.2.2 Distinguishing by nominal content

The alloying element shall be distinguished by the nominal content (middle of the range) rounded to the nearest integer or, if necessary, to the nearest 0,5, or, for contents less than 1 % to the nearest 0,1.

EXAMPLE 1 EN AB-Al Si7Mg0,3

EXAMPLE 2 EN AB-Al Si7Mg0,6.

4.2.3 Distinguishing by main impurities

The main impurity or impurities shall be added in parentheses.

EXAMPLE 1 EN AB-Al Si10Mg(Cu)

EXAMPLE 2 EN AB-Al Si10Mg(Fe)

EXAMPLE 3 EN AB-Al Si9Cu3(Fe)(Zn)

4.2.4 Distinguishing by a suffix

If the above provision is not sufficient for differentiating between several alloys, a suffix shall be used : (a), (b), (c)..., according to the date of registration. This suffix shall consist of a lower case letter placed in parentheses to avoid confusion with the chemical symbols.

EXAMPLE 1 EN AB-AI Si12(a)

EXAMPLE 2 EN AB-AI Si12(b)

4.3 Special application for master alloys

A suffix (A) or (B) shall be used at the end of the chemical designation, according to the level of impurities, i.e.:

- (A) for master alloy with low level of impurities ;
- (B) for master alloy with high level of impurities.

Annex A (normative)

International chemical symbols

Aluminium	Al	Molybdenum	Mo
Silver	Ag	Sodium	Na
Boron	B	Niobium	Nb
Beryllium	Be	Nickel	Ni
Bismuth	Bi	Phosphorus	P
Calcium	Ca	Lead	Pb
Cadmium	Cd	Rare Earths	RE
Cerium	Ce	Antimony	Sb
Cobalt	Co	Silicon	Si
Chromium	Cr	Tin	Sn
Copper	Cu	Strontium	Sr
Iron	Fe	Titanium	Ti
Gallium	Ga	Vanadium	V
Lithium	Li	Zinc	Zn
Magnesium	Mg	Zirconium	Zr
Manganese	Mn		

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.*

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at <http://www.bsi-global.com>.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001. Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at <http://www.bsi-global.com/bsonline>.

Further information about BSI is available on the BSI website at <http://www.bsi-global.com>.

Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

Details and advice can be obtained from the Copyright & Licensing Manager. Tel: +44 (0)20 8996 7070. Fax: +44 (0)20 8996 7553. Email: copyright@bsi-global.com.