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Edition 1

Any reference to SABS EN 1706 is deemed
to be a reference to this standard
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SOUTH AFRICAN NATIONAL STANDARD

Aluminium and aluminium alloys — Castings — Chemical composition and mechanical properties

This national standard is the identical implementation of EN 1706:1998 and is adopted with the permission of CEN, rue de Stassart 36, B-1050 Brussels.

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Table of changes

Change No.	Date	Scope
Nat. amdt 1	2007	Amended to change the designation from SABS to SANS, with no technical changes.

National foreword

This South African standard was approved by National Committee StanSA SC 5120.20F, *Engineering materials — Non-ferrous metals*, in accordance with procedures of Standards South Africa, in compliance with annex 3 of the WTO/TBT agreement.

This standard was published in March 2007. This SANS edition is technically identical to SABS edition 1 (SABS EN 1706:1998).

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EN 1706

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Descriptors: Aluminium, aluminium alloys, castings, definitions, designation, chemical composition, mechanical properties, tests

English version

Aluminium and aluminium alloys — Castings — Chemical composition and mechanical properties

Aluminium et alliages d'aluminium —
Pièces moulées — Composition chimique et
caractéristiques mécaniques

Aluminium und Aluminiumlegierungen —
Gußstücke — Chemische Zusammensetzung und
mechanische Eigenschaften

This European Standard was approved by CEN on 9 August 1997.

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European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Ref. No. EN 1706:1998 E

Foreword

This European Standard 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of an identical text or by endorsement, at the latest by September 1998, and conflicting national standards shall be withdrawn at the latest by September 1998.

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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1 Scope

This standard specifies the chemical composition limits for aluminium casting alloys and mechanical properties of separately cast test bars for these alloys. As a guide to the selection of alloys for a specific use or process, annex A "Comparison of casting characteristics mechanical and other properties", is included for information only.

This standard shall be used in conjunction with the following standards:

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

EN 1559-1, *Founding — Technical conditions of delivery — Part 1: General.*

prEN 1559-4, *Founding — Technical conditions of delivery — Part 4: Additional requirements for aluminium alloy castings.*

EN ISO 8062, *Castings — System of dimensional tolerances and machining allowances.*

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.

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

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

EN 1780-2, *Aluminium and aluminium alloys — Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings — Part 2: Chemical symbol based designation system.*

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

EN 10002-1, *Metallic materials — Tensile testing — Part 1: Method of test (at ambient temperature) "including Addendum AC1:1990".*

EN 10003-1, *Metallic materials — Hardness testing — Part 1: Brinell test.*

prEN 12258-1, *Aluminium and aluminium alloys — Terms and definitions — Part 1: General.*

3 Definitions

For the purpose of this European Standard, the definitions in prEN 12258-1 apply together with the following:

3.1

casting

process in which molten metal is poured into a mould and solidified

3.2

sand casting

process in which molten metal is poured into a sand mould and solidified (at atmospheric pressure)

3.3

permanent mould casting; chill casting

process in which molten metal is poured into a permanent mould and solidified (at atmospheric pressure)

3.4

low pressure die casting

process in which molten metal is poured into a permanent metal mould and solidified under low pressure (typically 0,7 bar above atmospheric pressure)

3.5

pressure die casting; high pressure die casting

process in which molten metal is injected into a permanent metal mould and solidified under high pressure (typically 700 bar above atmospheric pressure)

3.6

investment casting

two step process comprising:

- a) fabrication of a ceramic mould around a wax or thermoplastic pattern which is lost during this process; and
- b) pouring of metal into this mould

3.7

fluidity

the ability of an alloy to make thin wall castings and reproduce fine detail

3.8

hot tearing

tendency for a crack to form in a casting due to the development of internal stress during solidification

3.9 pressure tightness

the tendency not to leak on pressure testing