

This document is a preview generated by EVS

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

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 1706:2020+A1:2021 sisaldab Euroopa standardi EN 1706:2020+A1:2021 ingliskeelset teksti.	This Estonian standard EVS-EN 1706:2020+A1:2021 consists of the English text of the European standard EN 1706:2020+A1:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 18.08.2021.	Date of Availability of the European standard is 18.08.2021.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 77.150.10

**Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele**

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autoriõiguse kaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

**The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation**

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about standards copyright protection, please contact the Estonian Centre for Standardisation and Accreditation: Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

**EN 1706:2020+A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2021

ICS 77.150.10

Supersedes EN 1706:2020

English Version

## Aluminium and aluminium alloys - Castings - Chemical composition and mechanical properties

Aluminium et alliages d'aluminium - Pièces moulées -  
Composition chimique et propriétés mécaniques

Aluminium und Aluminiumlegierungen - Gussstücke -  
Chemische Zusammensetzung und mechanische  
Eigenschaften

This European Standard was approved by CEN on 2 March 2020 and includes Amendment 1 approved by CEN on 1 July 2021.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

<b>Contents</b>	<b>Page</b>
European foreword.....	3
<b>1 Scope.....</b>	<b>4</b>
<b>2 Normative references.....</b>	<b>4</b>
<b>3 Terms and definitions.....</b>	<b>5</b>
<b>4 Ordering information.....</b>	<b>6</b>
<b>5 Designation systems.....</b>	<b>7</b>
5.1 Numerical designation system.....	7
5.2 Chemical symbol based designation system.....	7
5.3 Temper designations.....	7
5.4 Casting process designations.....	7
5.5 Designations to be included in drawings.....	7
<b>6 Chemical composition.....</b>	<b>8</b>
6.1 General.....	8
6.2 Samples for chemical analysis.....	8
<b>7 Mechanical properties.....</b>	<b>14</b>
7.1 General.....	14
7.2 Tensile tests.....	18
7.3 Test pieces.....	18
7.3.1 General.....	18
7.3.2 Separately cast test samples.....	18
7.3.3 Test pieces taken from castings.....	19
7.4 Hardness tests.....	20
<b>8 Rounding rules for determination of compliance.....</b>	<b>20</b>
<b>Annex A (informative) Mechanical properties of high pressure die cast alloys.....</b>	<b>21</b>
<b>Annex B (informative) Potentially achievable mechanical properties of test pieces taken from a casting.....</b>	<b>22</b>
<b>Annex C (informative) Comparison of casting characteristics, mechanical and other properties.....</b>	<b>24</b>
<b>Annex D (informative) Comparison between cast aluminium alloy designations.....</b>	<b>33</b>
<b>Bibliography.....</b>	<b>35</b>

## European foreword

This document (EN 1706:2020+A1:2021) 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 February 2022, and conflicting national standards shall be withdrawn at the latest by February 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

CEN/TC 132 affirms it is its policy that in the case when a patentee refuses to grant licences on standardized products under reasonable and not discriminatory conditions, then this product shall be removed from the corresponding standard.

This document supersedes A1 EN 1706:2020 A1.

A1 *deleted text* A1

This document includes Amendment 1 approved by CEN on 7 June 2021.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 23 “Revision of EN 1676 and EN 1706” to revise EN 1706:2010.

A1 Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website. A1

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This document specifies the chemical composition limits for aluminium casting alloys and mechanical properties of separately cast test pieces for these alloys.

Annex C is included as a guide to the selection of alloys for a specific use or process.

This document is intended to be used in conjunction with EN 576, EN 1559-1, EN 1559-4, EN 1676 and EN ISO 8062-3.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 576, *Aluminium and aluminium alloys — Unalloyed aluminium ingots for remelting — Specifications*

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

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

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

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*

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*

EN ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1)*

EN ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method (ISO 6506-1)*

EN 12258-1:2012, *Aluminium and aluminium alloys — Terms and definitions — Part 1: General terms*