



BSI Standards Publication

Aluminium and aluminium alloys — Mechanical potential of Al-Si alloys for high pressure, low pressure and gravity die casting

National foreword

This Published Document is the UK implementation of CEN/TR 16748:2014.

The UK participation in its preparation was entrusted to Technical Committee NFE/35, Light metals and their alloys.

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

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Published by BSI Standards Limited 2014

ISBN 978 0 580 86319 6

ICS 77.120.10

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 December 2014.

Amendments/corrigenda issued since publication

Date	Text affected
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ICS 77.120.10

English Version

Aluminium and aluminium alloys - Mechanical potential of Al-Si alloys for high pressure, low pressure and gravity die casting

Aluminium et alliages d'aluminium - Potentiel mécanique des alliages Al-Si coulés sous pression et dans des moules permanents pour moulage par gravité et basse pression

Aluminium und Aluminiumlegierungen - Potential der mechanischen Eigenschaften von AlSi-Legierungen für Druckguss, Niederdruckguss und Schwerkraftkokillenguss

This Technical Report was approved by CEN on 9 September 2014. It has been drawn up by the Technical Committee CEN/TC 132.

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Foreword

This document (CEN/TR 16748:2014) has been prepared by Technical Committee CEN/TC 132 "Aluminium and aluminium alloys", the secretariat of which is held by AFNOR.

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1 Scope

This Technical Report presents the characteristics of reference dies and reference castings, to be used for evaluating the mechanical potential (in terms of Ultimate Tensile Strength, Yield Strength and Elongation) which can be expected by Al-Si based alloys, cast by high pressure, low pressure and gravity (permanent mould) processes. These properties are measured on separately cast test specimens produced with state-of-the-art knowledge on die design, process management and alloy treatments correctly applied to minimize defects and imperfections.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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 1676, *Aluminium and aluminium alloys - Alloyed ingots for remelting - Specifications*

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

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12258-1:2012 and the following apply.

3.1 casting process

process in which molten metal is introduced into a mould where it solidifies

[SOURCE: EN 12258-1:2012, 3.1.1]

3.2 die casting process

casting process in which molten metal is injected under substantial pressure, typically above 7 MPa, into a metal die and solidifies under this pressure

Note 1 to entry: Die casting process is also referred to as "pressure die casting (process)" or "high pressure die casting (process)".

[SOURCE: EN 12258-1:2012, 3.1.10]

3.3 permanent mould casting process

casting process in which molten metal is introduced by gravity or low pressure into a mould constructed of durable material, typically iron or steel

Note 1 to entry: A permanent mould casting process where the metal solidifies in a metal mould under low pressure (typically less than 1 bar above atmospheric pressure) is also referred to as a "low pressure die casting process".

[SOURCE: EN 12258-1:2012, 3.1.9]