

Title (en)

High temperature Al-Cu-Mg-Ag alloy and method for producing a semi-finished product or product from such an aluminium alloy

Title (de)

Warmfeste Al-Cu-Mg-Ag-Legierung sowie Verfahren zur Herstellung eines Halbzeuges oder Produktes aus einer solchen Aluminiumlegierung

Title (fr)

Alliage d'Al-Cu-Mg-Ag résistant à la chaleur et procédé de fabrication d'un demi-produit ou d'un produit à partir d'un tel alliage d'aluminium

Publication

EP 2559779 B1 20160113 (DE)

Application

EP 11177747 A 20110817

Priority

EP 11177747 A 20110817

Abstract (en)

[origin: EP2559779A1] Heat resistant aluminum-copper-magnesium-silver alloy for producing semi-finished products or products suitable for applying at higher temperatures, and exhibiting high static and dynamic strength properties and an improved creep resistance, comprises (in wt. %) silicon (0.3-0.7), iron (not > 0.15), copper (3.5-4.7), manganese (0.05-0.5), magnesium (0.3-0.9), titanium (0.02-0.15), zirconium (0.03-0.25), silver (0.1-0.7), scandium (0.03-0.5), vanadium (0.03-0.2), other component (not > 0.05), and aluminum (remaining), where the total amount of other component is not > 0.15 wt.%. An independent claim is also included for producing the semi-finished product or a product of the aluminum alloy, comprising (a) casting a bar made of the alloy with a sufficient resolution of the elements comprising zirconium, scandium and vanadium, (b) homogenizing the cast bar at a temperature that is as close as possible below the melting temperature of the alloy for a time sufficient to obtain an uniform distribution of the alloy elements in the cast structure, preferably at 485-510[deg] C for 10-25 hours, (c) hot working the homogenized bar by extruding, forging including indirect extrusion and/or rolling at 280-470[deg] C, (d) solution annealing the extruded, forged and/or rolled semi-finished product at temperatures that are sufficiently high for curing the alloy elements uniformly distributed in the structure to be brought into solution, preferably at 480-510[deg] C for 30 minutes to 8 hours, (e) quenching the solution heat treated semi-finished product in water at a temperature between room temperature and 100[deg] C, or water-glycol mixtures at temperatures = 50[deg] C, where the water-glycol mixtures has 60% glycol, (f) compressing or stretching the semi-finished product by an amount that leads to a reduction of the internal stresses, which are formed during the quenching in cold quenching medium, preferably by 1-5%, and (g) thermosetting the quenched-, optionally cold compressed- or stretched semi-finished at temperatures that are adapted in the steps (a), (b) or (c) preferably 80-210[deg] C for 5-35 hours, preferably 10-25 hours.

IPC 8 full level

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CPC (source: EP US)

B22D 7/005 (2013.01 - EP US); **B22D 27/00** (2013.01 - EP US); **C21D 1/60** (2013.01 - EP US); **C22C 21/00** (2013.01 - EP US); **C22C 21/14** (2013.01 - EP US); **C22C 21/16** (2013.01 - EP US); **C22F 1/057** (2013.01 - EP US)

Cited by

CN115927935A; EP2719784A4; CN117127071A

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DOCDB simple family (application)

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