

Title (en)

Aluminium alloy with low quench sensitivity and process for the manufacture of a semi-finished product of this alloy

Title (de)

Abschreckunempfindliche Aluminiumlegierung sowie Verfahren zum Herstellen eines Halbzeuges aus dieser Legierung

Title (fr)

Alliage d'Aluminium avec sensibilité à la trempe réduite et procédé de fabrication d'un produit demi-final lors de cet alliage

Publication

EP 1683882 A1 20060726 (DE)

Application

EP 05111026 A 20051121

Priority

DE 102005002390 A 20050119

Abstract (en)

An aluminum alloy for production of high-strength forged pieces that are low in inherent tension, and high-strength extruded and rolled products, comprises 7.0-10.5 wt.% zinc (Zn); 1-2.5 wt.% magnesium (Mg); 0.1-1.15 wt.% copper (Cu); 0.06-0.25 wt.% zirconium; 0.02-0.15 wt.% titanium; =0.5 wt.% manganese; =0.6 wt.% silver; =0.10 wt.% silicon; =0.10 wt.% iron; =0.04 wt.% chrome; hafnium, scandium, strontium and/or vanadium at =1 wt.%. An aluminum alloy for production of high-strength forged pieces that are low in inherent tension, and high-strength extruded and rolled products, comprises 7.0-10.5 wt.% zinc (Zn); 1-2.5 wt.% magnesium (Mg); 0.1-1.15 wt.% copper (Cu); 0.06-0.25 wt.% zirconium (Zr); 0.02-0.15 wt.% titanium (Ti); =0.5 wt.% manganese (Mn); =0.6 wt.% silver (Ag); =0.10 wt.% silicon (Si); =0.10 wt.% iron (Fe); =0.04 wt.% chrome; hafnium (Hf), scandium (Sc), strontium (Sr) and/or vanadium (V) with a summary content of =1 wt.%, and contaminants at proportions of =0.05 wt.% per element with a total contaminant proportion of =0.15 wt.%. A remaining amount by wt.% is aluminum (Al); and a sum of the alloy elements Zn, Mg and Cu is >=9 wt.%. An independent claim is also included for a method for the production of a high-strength semifinished product low in inherent tension, up to greater thickness values, comprising providing an aluminum alloy; hot forming homogenized bars via forging, extrusion and/or rolling, at 350-440[deg]C; solution heat treating the hot-formed semi-finished product at a temperature sufficiently high to bring the alloy elements necessary for hardening into solution uniformly distributed in the structure; quenching the solution heat treated semi-finished products in a quenching medium comprising water, in a water/glycol mixture, or in a salt mixture at 100-170[deg]C; cold forming the quenched semi-finished product to reduce a set of inherent tensions that occurred during quenching in the quenching medium; and artificial aging the quenched semi-finished product, in at least one stage, where a heating rate, holding time, and temperature is adjusted for optimization of the properties.

IPC 8 full level

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CPC (source: EP US)

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Citation (search report)

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