Title (en)

Aluminium alloy with good machinability

Title (de)

Aluminiumlegierung mit guter Spanbarkeit

Title (fr)

Alliage d'aluminium avec une bonne usinabilité

Publication

EP 0828008 A3 19981111 (DE)

Application

EP 97810609 A 19970828

Priority

CZ 262896 A 19960909

Abstract (en)

[origin: EP0828008A2] A machinable aluminium alloy, especially a free-machining AlCu or AlMgSi alloy, contains 0.2-1.2 wt.% Sn and 0.2-1.0 wt.% Bi as chip-breaking additives. Preferably, the alloy has the composition (by wt.): (a) 4.6-6.0% Cu, 0.2-1.0 (preferably 0.4-0.9, especially 0.6-0.8)% Bi, 0.2-0.7 (preferably 0.3-0.6, especially 0.4-0.6)% Sn, NOTGREATER 0.45% Zn, NOTGREATER 0.7% Fe, NOTGREATER 0.4% Si, NOTGREATER 0.05% each (NOTGREATER 0.15% total) of other alloying elements and balance Al; or (b) 0.6-1.2% Mg, 0.6-1.4% Si, 0.6-1.2 (preferably 0.7-1.0, especially 0.7-0.9)% Sn, 0.2-0.7 (preferably 0.3-0.6, especially 0.4-0.6)% Bi, 0.2-0.6% Mn, NOTGREATER 0.5% Fe, NOTGREATER 5 (preferably 0.15-0.40)% Cu, NOTGREATER 0.2 (preferably 0.04-0.10)% Ti, NOTGREATER 0.05% each (NOTGREATER 0.15% total) of other alloying elements and balance Al. Preferably, alloy (a) is produced by semi-continuous casting, high temperature annealing and extruding, followed by (i) solution annealing, quenching and artificial ageing to the maximum age-hardened state, resulting in a tensile strength of ≥ 370 MPa, a yield strength of ≥ 280 MPa, a hardness of ≥ 110 HB and an elongation at fracture (A5) of ≥ 10%; or (ii) solution annealing, quenching and artificial ageing to less than the maximum age-hardened state, resulting in a tensile strength of ≥ 270 MPa, a yield strength of ≥ 150 MPa, a hardness of ≥ 80 HB and an elongation at fracture (A5) of ≥ 20%.

IPC 1-7

C22C 21/12; C22C 21/14; C22C 21/16; C22F 1/057

IPC 8 full level

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CPC (source: EP)

C22C 21/003 (2013.01); **C22C 21/02** (2013.01); **C22C 21/08** (2013.01); **C22C 21/12** (2013.01)

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