

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  $\geq 370$  MPa, a yield strength of  $\geq 280$  MPa, a hardness of  $\geq 110$  HB and an elongation at fracture (A5) of  $\geq 10\%$ ; or (ii) solution annealing, quenching and artificial ageing to less than the maximum age-hardened state, resulting in a tensile strength of  $\geq 270$  MPa, a yield strength of  $\geq 150$  MPa, a hardness of  $\geq 80$  HB and an elongation at fracture (A5) of  $\geq 20\%$ .

IPC 1-7  
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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)

Citation (search report)  
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• [A] PODGORNIK A ET AL: "DER EINFLUSS DER OBERFLAECHENSPANNUNG AUF GROESSE UND VERTEILUNG VON SPANBRECHENDEN EINSCHLUESSEN BEU LEGIERUNGEN VON TYP ALCU5(PB)(BI)", ALUMINIUM, vol. 47, no. 9, 1971, pages 554 - 556, XP002050754  
• [A] PATENT ABSTRACTS OF JAPAN vol. 015, no. 173 (C - 0828) 2 May 1991 (1991-05-02)  
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