

Title (en)
High strength aluminum-based alloys

Title (de)
Hochfeste Legierungen auf Aluminiumbasis

Title (fr)
Alliages à base d'aluminium, à haute résistance

Publication
EP 0475101 B1 19951213 (EN)

Application
EP 91113667 A 19910814

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Abstract (en)
[origin: EP0475101A1] The present invention provides aluminum-based alloys with high strength and toughness, the alloys having a composition consisting of the general formula (I) $AlaMbLnc$ or the general formula (II) $AlaMbXdLnc$, wherein M is at least one metal element selected from the group consisting of Co, Ni, and Cu; X is at least one metal element selected from the group consisting of V, Mn, Fe, Mo, Ti and Zr; Ln is at least one element selected from the group consisting of Y, rare earth elements and Mm (misch metal) which is a composite of rare earth elements; and a, b, c and d are, in atomic percentage, $75 \leq a \leq 97$, $0.5 \leq b \leq 15$, $0.5 \leq c \leq 10$ and $0.5 \leq d \leq 3.5$. The alloys are composed of an aluminum matrix or an aluminum supersaturated solid solution matrix which has an average crystal grain size of 0.1 to 80 μm and contains therein a uniform dispersion of metastable or stable phase particles composed of intermetallic compounds formed between the host element (matrix element) and the above-mentioned alloying elements, the intermetallic compounds having an average particle size of 10 to 500 nm.

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Cited by
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