

Title (en)

High strength magnesium-based alloy materials and method for producing the same

Title (de)

Hochfeste Werkstoffe auf Legierungen auf Magnesiumbasis und Verfahren zur Herstellung dieser Werkstoffe

Title (fr)

Matériaux à base d'alliages de magnésium, à haute résistance mécanique et procédé de fabrication de ces matériaux

Publication

EP 0643145 B1 19981223 (EN)

Application

EP 94111190 A 19940718

Priority

JP 19348393 A 19930804

Abstract (en)

[origin: EP0643145A1] High strength magnesium-based alloy materials having a microcrystalline composite structure, the alloy materials consisting of a composition represented by the general formula (I): $\text{Mg}_a\text{Ndb}_b\text{Znc}_c$, wherein a, b and c are, in atomic %, $80 \leq a \leq 99$, $1 \leq b \leq 12$ and $0 \leq c \leq 12$; or the general formula (II): $\text{Mg}_{a'}\text{Ndb}'_b\text{Znc}'_c$, wherein a', b' and c' are, in atomic %, $95 < a' \leq 99$, $1 \leq b' \leq 3$ and $0 \leq c' \leq 3$. The alloy materials have superior mechanical properties as high specific strength materials and plastic working materials and are produced by rapidly solidifying a molten alloy represented by the general formula (I) or (II) so as to form a fine-grained matrix phase; and subjecting the resultant rapidly solidified alloy to plastic working at a prescribed heating temperature for work hardening, thereby forming a microcrystalline composite structure having a dispersion of the fine intermetallic compounds in the matrix.

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