

Title (en)

High strength and high toughness aluminum alloy structural member, and process for producing the same.

Title (de)

Hochfestes Konstruktionselement aus einer Aluminiumlegierung mit hoher Zähigkeit und Verfahren zu ihrer Herstellung.

Title (fr)

Pièce d'un alliage d'aluminium à haute résistance mécanique et haute ténacité et procédé pour sa fabrication.

Publication

**EP 0570910 A1 19931124 (EN)**

Application

**EP 93108091 A 19930518**

Priority

- JP 12651092 A 19920519
- JP 13395792 A 19920526
- JP 15607192 A 19920522

Abstract (en)

A high strength and high toughness aluminum alloy structural member is produced by crystallization of an aluminum alloy blank having a metallographic structure including an amorphous phase. The structural member includes an aluminum crystal matrix and intermetallic compound crystals dispersed in the aluminum alloy matrix. If the average grain size of aluminum crystals is represented by  $d_1$ , and the grain size of the intermetallic compound crystals is represented by  $d_2$ , the average percentage  $P_1$  of the total number of small intermetallic compound crystals having the grain size  $d_2$  equal to or less than  $d_1/2$  ( $d_2 \leq d_1/2$ ) is set at a value equal to or more than 80 % ( $P_1 \geq 80\%$ ). An increase in strength of the structural member is provided by dispersing the intermetallic compound crystals in the aluminum crystal matrix. With a reduction in size of the intermetallic compound crystals, an impact force on the structural member is absorbed into the aluminum crystals, leading to an increase in toughness of the structural member. <IMAGE>

IPC 1-7

**C22C 21/00**; **C22C 45/08**; **C22F 1/00**

IPC 8 full level

**C22C 1/04** (2006.01); **C22C 21/00** (2006.01); **C22C 45/08** (2006.01); **C22F 1/04** (2006.01)

CPC (source: EP)

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Citation (search report)

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