

Title (en)
METHOD OF WARM WORKING OF A STEEL MATERIAL AND STEEL MATERIAL OBTAINED BY THE SAME

Title (de)
VERFAHREN ZUM WARMUMFORMEN EINES STAHLMATERIALS UND DADURCH ERHALTENES STAHLMATERIAL

Title (fr)
PROCEDE D'ÉCROUISSAGE A CHAUD D'UN ACIER ET MATERIAU D'ACIER OBTENU AVEC LE PROCEDE

Publication
EP 1956100 A1 20080813 (EN)

Application
EP 06833094 A 20061121

Priority
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• JP 2005336331 A 20051121

Abstract (en)
There are provided a steel for warm working, to be subjected to warm working as various structures, components of cars, and the like, a warm working method thereof, and a steel material and a steel component obtainable from the warm working method. [Solving Means] A steel is to have a particle dispersion type fiber structure formed in the matrix by warm working. The steel is characterized in that the total amount of the dispersed second-phase particles at room temperature is 7×10^{-3} or more in terms of volume fraction, and the Vickers hardness (HV) is equal to or larger than the hardness H of the following equation (2): $H = (5.2 - 1.2 \times 10^{-4} \times t) \times 10^2 \dots (2)$ when the steel is subjected to any of annealing, tempering, and aging treatments in the as-unworked state under conditions such that a parameter τ expressed by the following equation (1): $\tau = T(\log t + 20)$ (T; temperature (K), t; time (hr)) ... (1) is 1.4×10^4 or more in a prescribed temperature range of 350°C or more and Ac1 point or less. This steel is taken as the steel for warm working.

IPC 8 full level
C21D 8/06 (2006.01); **C21D 8/02** (2006.01); **C21D 8/04** (2006.01); **C21D 8/10** (2006.01); **C21D 9/00** (2006.01); **C21D 9/46** (2006.01); **C21D 9/52** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/18** (2006.01)

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Cited by
CN107138660A; CN102597543A; US2010247368A1; US11053562B2; CN108176954A; CN104011250A; EP2799585A4; DE102015113058A1; EP3187610A4; US8876451B2

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