

Title (en)
HOT-WORKING TOOL STEEL HAVING EXCELLENT STIFFNESS AND HIGH-TEMPERATURE STRENGTH AND METHOD FOR PRODUCTION THEREOF

Title (de)
WARMARBEITSSTAHL MIT HERVORRAGENDER STEIFIGKEIT UND HOCHTEMPERATURFESTIGKEIT UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
ACIER À OUTILS POUR FORMAGE À CHAUD PRÉSENTANT D'EXCELLENTE QUALITÉ DE RIGIDITÉ ET DE RÉSISTANCE À DES TEMPÉRATURES ÉLEVÉES, ET SON PROCÉDÉ DE PRODUCTION

Publication
EP 2065483 A4 20160323 (EN)

Application
EP 07807322 A 20070914

Priority
• JP 2007067915 W 20070914
• JP 2006251003 A 20060915

Abstract (en)
[origin: EP2065483A1] Disclosed is a hot-working tool steel having improved toughness and high-temperature strength. Also disclosed is a method for producing the hot-working tool steel. The hot-working tool steel comprises the following components (by mass): C: 0.34-0.40%, Si: 0.3-0.5%, Mn: 0.45-0.75%, Ni: 0-0.5% (exclusive), Cr: 4.9-5.5%, (Mo+1/2W): 2.5-2.9% (provided that Mo and W are contained singly or in combination), and V: 0.5-0.7%, with the remainder being Fe and unavoidable impurities. Preferably, the cross-sectional structure of the hot-working tool steel upon quenching contains a granular structure and an acicular structure, wherein the granular structure (A%) accounts for 45 area% or less, the acicular structure (B%) accounts for 40 area% or less, and the remaining austenite (C%) accounts for 5 to 20 volume%.; Also disclosed is a method for producing a hot-working tool steel, which comprises tempering the above-mentioned hot-working tool steel so that a value X determined by the following relational expression between a tempered hardness (HRC) and the percentages of the tissues becomes 40 or greater. $X = -0.36 \times \text{HRC} - 1.47 \times A\% - 1.67 \times B\% + 6.55 \times C\% + 72.91$

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Citation (search report)
• [X] EP 1084282 B1 20030521 - UDDEHOLM TOOLING AB [SE]
• [X] JP H02179848 A 19900712 - AICHI STEEL WORKS LTD
• [X] JP H08188852 A 19960723 - KOBE STEEL LTD, et al
• [X] SCHNEIDER R ET AL: "EFFECTS OF DIFFERENT ALLOYING ELEMENTS ON THE HARDNESS PROFILE OF NITRIDED HOT-WORK TOOL STEELS", BHM. BERG UND HUETTENMAENNISCHE MONATSHEFTE, SPRINGER, VIENNA, AU, vol. 151, no. 3, 1 March 2006 (2006-03-01), pages 105 - 109, XP002574215, ISSN: 0005-8912, DOI: 10.1007/BF03165181
• See references of WO 2008032816A1

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EP3150735A4; EP2270245A1; CN101921958A; EP2662460A1; EP2682491A4; WO2013167628A1; WO2014131907A1

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