

Title (en)

Tool steel with excellent workability, machinability and heat treatment characteristics, and die using same

Title (de)

Wärmebehandlungsfähiger Werkzeugstahl mit hervorragender Bearbeitbarkeit und Kaltumformbarkeit; Matrizen aus diesem Stahl

Title (fr)

Acier à outils facilement façonnable, usinable et apte au traitement thermique ; matrices fabriquées dudit acier

Publication

EP 1072691 A2 20010131 (EN)

Application

EP 99123519 A 19991125

Priority

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Abstract (en)

Provided is a tool steel which contains, by weight, C and Cr in both of which (Cr + 5.9 x C) is 9.1 to 12.5, (Cr - 4.2 x C) being not more than 5 and (Cr - 6.3 x C) being not less than 2.2. In addition to these elements, this tool steel preferably contains 0.1 to 0.6% Si, 0.1 to 1.2% Mn, at least one of Mo and W of 0.6 to 1.25% in total in terms of (Mo + 1/2W), less than 0.5% V, not more than 0.12% S, not more than 100 ppm of Ca, and the balance Fe and incidental impurities. Moreover, in this tool steel, the Cr segregation range in matrix after hardening is not more than 1% by weight, or the maximum tempering hardness by tempering at a temperature of not lower than 500 DEG C is not less than 57 HRC, or a size variation due to heat treatment occurring by tempering at a temperature of not lower than 500 DEG C is not more than 0.1% relative to the size measured just before hardening in terms of linear expansion coefficient and a size variation due to heat treatment by tempering at 490 DEG C is not more than 0. Provided is also a die made by tempering the steel of the invention to a hardness of not less than 55 HRC and cutting the steel. <IMAGE>

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IPC 8 full level

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Cited by

EP2979772A4; EP1580290A4; CN113634738A; EP1149929A3; EP2055798A1; US8815147B2; US6569266B2; US8012272B2; EP3255165B1

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