

Title (en)
Powder metallurgy tool steel.

Title (de)
Pulvermetallurgische Werkzeugstähle.

Title (fr)
Acier à outils obtenu par métallurgie des poudres.

Publication
EP 0467857 A1 19920122 (EN)

Application
EP 91830235 A 19910530

Priority
IT 4815090 A 19900717

Abstract (en)
A new composition for powder-metallurgy (PM) tool steel, characterized by the absence of Co, reduction of W content and increase in Mo and V contents is disclosed. The steel contains (wt%) , C from 1.50 to 1.85, Mn from 0.20 to 0.55, Si from 0.35 to 0.70, W from 1.50 to 3.00, Mo from 8.00 to 9.50, V from 5.50 to 6.50, and Cr from 3.00 to 5.00, the remainder being iron and minor impurities. The powder used in the manufacturing process is obtained by atomization in a gas which may be nitrogen or argon, the ensuing particles being spherical in shape, 80% of them being smaller than 500 μ m. The manufacturing process comprises the following steps: cooling during powder solidification at a rate between 1000 and 10000 DEG C/s hot isostatic pressing to obtain a semifinished piece transformation of the semi into the desired product heating of the product in a salt-bath at a temperature between 1160 and 1200 DEG C for between 3 and 10 minutes hardening in a salt-bath at a temperature between 450 and 600 DEG C followed by cooling to room temperature series of three successive temperings at temperatures between 530 and 560 DEG C, between 540 and 570 DEG C, and again between 530 and 560 DEG C, each for between one and two hours. The tool steel, obtained in this way, contains precipitated carbides of the M₂C-MC type measuring less than 3.5 μ m and a volume fraction between 13 and 18%.

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IPC 8 full level
C22C 33/02 (2006.01)

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C22C 33/0278 (2013.01); **C22C 33/0292** (2013.01)

Citation (search report)
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