

Title (en)  
Methods of thermo-mechanically processing tool steel and tools made from thermo-mechanically processed tool steels

Title (de)  
Verfahren zur thermomechanischen Verarbeitung von Werkzeugstahl und aus thermomechanischen Werkzeugstählen hergestellte Werkzeuge

Title (fr)  
Procédés d'acier d'outil à traitement thermomécanique et outil fabriqué à partir d'aciers d'outils traités thermo-mécaniquement

Publication  
**EP 2090383 A1 20090819 (EN)**

Application  
**EP 09002103 A 20090216**

Priority  
US 2923608 P 20080215

Abstract (en)  
A method of thermo-mechanically processing a preform (64) composed of tool steel and a tool (18) to modify a workpiece (28). The preform (64) has a region containing austenite. The method comprises establishing the region at a process temperature between a martensitic start temperature and a stable austenitic temperature. While at the process temperature, the region is deformed to change an outer dimension and to modify the microstructure to a depth of 1 millimeter or more. The tool (18) comprises a member (20) composed of tool steel. The member (20) includes a first region (30) that extends from the outer surface (22) to a depth of greater than 1 millimeter and a second region (32). The first region (30) includes a plurality of grains having an average misorientation angle greater than about 34°, an average grain size that is at least 10% smaller than the second region (30), and has a different grain orientation than the second region (30).

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Citation (applicant)  
US 3903761 A 19750909 - RUNTON LESLIE A

Citation (search report)  
• [XII] US 3903761 A 19750909 - RUNTON LESLIE A  
• [XP] EP 1985390 A1 20081029 - DAYTON PROGRESS CORP [US]  
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