

Title (en)
TOOL STEEL, IN PARTICULAR HOT-WORK STEEL, AND STEEL OBJECT

Title (de)
WERKZEUGSTAHL, INSBESONDERE WARMARBEITSSTAHL, UND STAHLGEGENSTAND

Title (fr)
ACIER À OUTIL, EN PARTICULIER POUR TRAVAIL À CHAUD ET OBJET EN ACIER

Publication
EP 3228724 B1 20220810 (DE)

Application
EP 17151574 A 20070608

Priority
• EP 06118672 A 20060809
• EP 07764595 A 20070608
• EP 2007005091 W 20070608

Abstract (en)
[origin: EP1887096A1] Procedure for adjusting the thermal conductivity of a steel, preferably a hot-work steel comprises metallurgically producing an internal structure of the steel, whose: carbide components exhibit a defined electron and phonon density, and/or crystal structure exhibits a mean free-path length for the phonon and electron flux that is defined by selectively produced lattice defects. Independent claims are included for: (1) a tool steel, preferably hot-work steel comprising carbon (0.26-0.55 wt.%), chromium (less than 2 wt.%), molybdenum (0-10 wt.%) and tungsten (0-15 wt.%), where the total content of tungsten and molybdenum is 1.8-15 wt.%, carbide-forming elements (0-3 wt.%) comprising titanium, zirconium, hafnium, niobium and/or tantalum, vanadium (0-4 wt.%), cobalt (0-6 wt.%), silicon (0-1.6 wt.%), manganese (0-2 wt.%), nickel (0-2.99 wt.%) and sulfur (0-1 wt.%), and the remaining of iron and unavoidable impurities; and (2) a steel object partially comprising a tool steel, preferably a hot-work steel.

IPC 8 full level
C22C 38/22 (2006.01)

CPC (source: EP KR US)
C21D 8/005 (2013.01 - KR); **C22C 33/006** (2013.01 - KR); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/12** (2013.01 - EP US); **C22C 38/14** (2013.01 - KR); **C22C 38/22** (2013.01 - EP US); **C22C 38/24** (2013.01 - EP US); **C22C 38/30** (2013.01 - EP US); **C22C 38/34** (2013.01 - EP US); **C22C 38/38** (2013.01 - EP US); **C22C 38/44** (2013.01 - EP US); **C22C 38/46** (2013.01 - EP US); **C22C 38/52** (2013.01 - EP US); **C22C 38/58** (2013.01 - EP US)

Citation (opposition)
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AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

Designated extension state (EPC)
HR

DOCDB simple family (publication)
EP 1887096 A1 20080213; AU 2007283164 A1 20080214; AU 2007283164 B2 20120216; BR PI0716490 A2 20150310; CA 2659849 A1 20080214; CA 2659849 C 20171121; CA 2981388 A1 20080214; CA 2981388 C 20200211; CN 101512034 A 20090819; CN 102888563 A 20130123; CN 102888563 B 20160330; EP 2052095 A1 20090429; EP 3228724 A1 20171011; EP 3228724 B1 20220810; ES 2929658 T3 20221130; JP 2010500471 A 20100107; JP 2014111835 A 20140619; JP 2015221941 A 20151210; JP 2016128609 A 20160714;

JP 2016156088 A 20160901; JP 5518475 B2 20140611; KR 101659704 B1 20160926; KR 20090038030 A 20090417;
KR 20150080642 A 20150709; KR 20160047582 A 20160502; MX 2009001483 A 20090515; PL 3228724 T3 20221219; PT 3228724 T 20221110;
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DOCDB simple family (application)

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CN 200780032677 A 20070608; CN 201210317360 A 20070608; EP 07764595 A 20070608; EP 17151574 A 20070608;
EP 2007005091 W 20070608; ES 17151574 T 20070608; JP 2009523159 A 20070608; JP 2013268301 A 20131226;
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KR 20157016617 A 20070608; KR 20167009181 A 20070608; MX 2009001483 A 20070608; PL 17151574 T 20070608;
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US 37686607 A 20070608; ZA 200900495 A 20090122