

Title (en)
HIGH STRENGTH, HIGH TOUGHNESS ROTATING SHAFT MATERIAL

Title (de)
HOCHFESTES, HOCHZÄHES DREHSCHAFTMATERIAL

Title (fr)
MATÉRIAU D'ARBRE ROTATIF À TÉNACITÉ ÉLEVÉE, À RÉSISTANCE ÉLEVÉE

Publication
EP 2171113 A1 20100407 (EN)

Application
EP 08772048 A 20080626

Priority
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• US 94624407 P 20070626

Abstract (en)
[origin: US2009004041A1] An age hardenable, martensitic steel alloy that provides high strength, high toughness, and good low cycle fatigue life and a method of making same are disclosed. The alloy comprises a matrix having a weight percent composition consisting essentially of about
<table id="TABLE-US-00001" num="00001"> <table frame="none" colsep="0" rowsep="0"> <tgroup align="left" colsep="0" rowsep="0" cols="3"> <colspec colname="offset" colwidth="42pt" align="left"/> <colspec colname="1" colwidth="84pt" align="left"/> <colspec colname="2" colwidth="91pt" align="left"/> <thead> <row> <entry/> <entry namest="offset" nameend="2" align="center" rowsep="1"/> </row> </thead> <tbody valign="top"> <row> <entry/> <entry>Carbon</entry> <entry> 0.2-0.36</entry> </row> <row> <entry/> <entry>Manganese</entry> <entry>0.20 max.</entry> </row> <row> <entry/> <entry>Silicon</entry> <entry>0.10 max.</entry> </row> <row> <entry/> <entry>Phosphorus</entry> <entry>0.01 max.</entry> </row> <row> <entry/> <entry>Sulfur</entry> <entry>0.004 max.</entry> </row> <row> <entry/> <entry>Chromium</entry> <entry> 1.3-4</entry> </row> <row> <entry/> <entry>Nickel</entry> <entry> 10-15</entry> </row> <row> <entry/> <entry>Molybdenum</entry> <entry>0.75-2.7</entry> </row> <row> <entry/> <entry>Cobalt</entry> <entry> 8-22</entry> </row> <row> <entry/> <entry>Aluminum</entry> <entry>0.01 max.</entry> </row> <row> <entry/> <entry>Titanium</entry> <entry>0.02 max.</entry> </row> <row> <entry/> <entry>Calcium</entry> <entry>0.001 max.</entry> </row> <row> <entry/> <entry namest="offset" nameend="2" align="center" rowsep="1"/> </row> </tbody> </tgroup> </table> </tables> and the balance being iron and usual impurities. The alloy further contains a plurality of inclusions dispersed in the alloy matrix. The inclusions comprise calcium compounds that are about 0.4 mum to about 7.0 mum in major dimension, they have a median size of at least about 1.6 mum in major dimension, and the inclusions contain essentially no rare earth elements.

IPC 8 full level
C22C 38/52 (2006.01); C22C 33/04 (2006.01)

CPC (source: EP US)
C22C 33/04 (2013.01 - EP US); C22C 38/44 (2013.01 - EP US); C22C 38/52 (2013.01 - EP US)

Citation (search report)
See references of WO 2009003112A1

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US 14705508 A 20080626; CA 2691795 A 20080626; CN 200880105114 A 20080626; EP 08772048 A 20080626; JP 2010515122 A 20080626; KR 20107001716 A 20080626; MX 2009014214 A 20080626; TW 97124031 A 20080626; US 2008068372 W 20080626