

Title (en)

METHOD FOR MAKING HARDENABLE STEEL PLATES BY FIRING, RESULTING STEEL PLATES

Title (de)

VERFAHREN ZUR HERSTELLUNG VON WÄRMEHÄRTBAREN STAHLBLECHEN DURCH GLÜHUNG, STAHLBLECHE UND DAVON HERGESTELLTE TEILE

Title (fr)

PROCEDE DE FABRICATION DE TOLES D'ACIER DURCISSABLES PAR CUISSON, TOLES D'ACIER ET PIECES AINSI OBTENUES

Publication

**EP 1558769 B1 20100609 (FR)**

Application

**EP 03775481 A 20031010**

Priority

- FR 0302985 W 20031010
- FR 0212753 A 20021014

Abstract (en)

[origin: US2006157166A1] The invention concerns a method for making hardenable steel plates by firing comprising: preparing a steel whereof the composition comprises, expressed in weight percent: 0.03=C=0.06, 0.50=Mn=1.10, 0.08:=Si=0.20, 0.015=Al=0.070, N=0.007, Ni=0.040, Cu=0.040, P=0.035, S=0.015, Mo=0.010, Ti=0.005; provided that it comprises boron in an amount such that 0.64=B/N=1.60 the rest consisting of iron and impurities resulting from production; casting a slab of said steel, then hot rolling of said slab to obtain a plate, the final rolling temperature being higher than the point Ar3; winding said plate at a temperature ranging between 500 and 700° C.; then cold rolling of said plate at a reduction rate ranging between 50 and 80%; continuous annealing heat treatment for a time interval less than 15 minutes; and strain hardening with a reduction rate ranging between 1.25 and 2.5%. The invention also concerns the hardenable plates and the parts obtainable therefrom.

IPC 8 full level

**C21D 8/04** (2006.01); **C21D 8/02** (2006.01); **C21D 9/52** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01)

CPC (source: EP KR US)

**C21D 8/0226** (2013.01 - EP US); **C21D 8/0236** (2013.01 - EP US); **C21D 8/0273** (2013.01 - EP US); **C21D 8/04** (2013.01 - KR); **C21D 9/52** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP KR US); **C22C 38/04** (2013.01 - EP KR US); **C22C 38/06** (2013.01 - EP KR US)

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

DOCDB simple family (publication)

**US 2006157166 A1 20060720; US 7540928 B2 20090602**; AT E470729 T1 20100615; AU 2003283507 A1 20040504; BR 0315255 A 20050823; BR 0315255 B1 20110309; CA 2502079 A1 20040429; CA 2502079 C 20110809; CN 100366760 C 20080206; CN 1705757 A 20051207; DE 60332951 D1 20100722; EP 1558769 A1 20050803; EP 1558769 B1 20100609; ES 2345045 T3 20100914; FR 2845694 A1 20040416; FR 2845694 B1 20051230; JP 2006503183 A 20060126; JP 2011006792 A 20110113; JP 4892190 B2 20120307; KR 101044741 B1 20110628; KR 20050055006 A 20050610; MX PA05003938 A 20050617; PL 200655 B1 20090130; PL 374746 A1 20051031; RU 2005114614 A 20051010; RU 2338792 C2 20081120; UA 80448 C2 20070925; WO 2004035838 A1 20040429; ZA 200502882 B 20051228

DOCDB simple family (application)

**US 53126403 A 20031010**; AT 03775481 T 20031010; AU 2003283507 A 20031010; BR 0315255 A 20031010; CA 2502079 A 20031010; CN 200380101406 A 20031010; DE 60332951 T 20031010; EP 03775481 A 20031010; ES 03775481 T 20031010; FR 0212753 A 20021014; FR 0302985 W 20031010; JP 2004544367 A 20031010; JP 2010160393 A 20100715; KR 20057006315 A 20031010; MX PA05003938 A 20031010; PL 37474603 A 20031010; RU 2005114614 A 20031010; UA 2005004482 A 20031010; ZA 200502882 A 20050408