

Title (en)

Heavy wall steel material having superior weldability and method for producing the same

Title (de)

Stahlwerkstoff mit verbesserter Schweissbarkeit für dickwandige Bauteile und Herstellungsverfahren

Title (fr)

Matériau en acier ayant une soudabilité améliorée pour éléments de construction à paroi épaisse et procédé de fabrication

Publication

EP 1031636 A3 20020403 (EN)

Application

EP 00301481 A 20000224

Priority

JP 4896299 A 19990225

Abstract (en)

[origin: EP1031636A2] A tough high strength heavy wall steel material having superior weldability is provided, said steel material has a diameter or a side 5 mm or more in length, and comprises oxides 1 μ m or less in particle diameter homogeneously dispersed at a dispersion density in a range of from 10,000 to 100,000 particles/mm² and uniform ferrite grains 2 μ m or less in grain diameter formed over the entire plane making a right angle with respect to the rolling direction. <IMAGE>

IPC 1-7

C22C 1/10; **C22C 38/04**; **C21D 8/00**

IPC 8 full level

C21D 8/00 (2006.01); **C21D 8/06** (2006.01); **C22C 1/10** (2006.01); **C22C 32/00** (2006.01); **C22C 33/04** (2006.01); **C22C 38/00** (2006.01); **C22C 38/04** (2006.01); **C22C 38/14** (2006.01)

CPC (source: EP KR US)

C21D 8/00 (2013.01 - EP KR US); **C21D 8/06** (2013.01 - EP US); **C22C 1/1094** (2013.01 - EP US); **C22C 32/0026** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **B22F 2998/00** (2013.01 - EP US)

Citation (search report)

- [A] EP 0761824 A2 19970312 - KAWASAKI STEEL CO [JP]
- [E] EP 0984072 A1 20000308 - JP NATIONAL RESEARCH INST FOR [JP], et al
- [PX] PATENT ABSTRACTS OF JAPAN vol. 1999, no. 14 22 December 1999 (1999-12-22)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1997, no. 05 30 May 1997 (1997-05-30)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1996, no. 02 29 February 1996 (1996-02-29)
- [A] J. A. GRAVES ET AL: "Undercooling behaviour during containerless processing", SOLIDIFICATION PROCESSING 1987 (PROCEEDINGS OF THE THIRD INTERNATIONAL CONFERENCE), October 1987 (1987-10-01), Sheffield, pages 264 - 267, XP002139571
- [A] GREGG N. R: "A microstructural investigation of a duplex chill cast brass grain refined with aluminium and boron (M. Phil. Thesis) and references 1-66", July 1990, SURREY UNIVERSITY (DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING), XP002139572

Cited by

DE102008053676A1; DE102008053676B4

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

EP 1031636 A2 20000830; **EP 1031636 A3 20020403**; **EP 1031636 B1 20041013**; AT E279543 T1 20041015; CN 1144884 C 20040407; CN 1297063 A 20010530; DE 60014726 D1 20041118; DE 60014726 T2 20060309; JP 2000239781 A 20000905; JP 3538613 B2 20040614; KR 100628795 B1 20060927; KR 20000058123 A 20000925; US 2002026969 A1 20020307; US 2003145917 A1 20030807; US 2005178482 A1 20050818; US 2007119527 A1 20070531; US 2011083775 A1 20110414

DOCDB simple family (application)

EP 00301481 A 20000224; AT 00301481 T 20000224; CN 00102663 A 20000225; DE 60014726 T 20000224; JP 4896299 A 19990225; KR 20000008188 A 20000221; US 10145905 A 20050408; US 37513703 A 20030228; US 69817107 A 20070126; US 93029701 A 20010816; US 96861710 A 20101215