

Title (en)

Ferritic heat-resistant steel and method for producing it

Title (de)

Ferritischer, wärmebeständiger Stahl und Verfahren zur Herstellung

Title (fr)

Acier ferritique réfractaire et procédé de fabrication

Publication

EP 1329531 A3 20030730 (EN)

Application

EP 03007332 A 19980921

Priority

- EP 98307629 A 19980921
- JP 25647997 A 19970922
- JP 25648097 A 19970922
- JP 25648197 A 19970922

Abstract (en)

[origin: EP0903421A1] The invention provides a ferritic heat-resistant steel having excellent high-temperature oxidation resistance, especially excellent steam oxidation-resistant characteristics. In high-Cr ferritic heat-resistant steel, ultra-fine oxide particles having a size of not larger than 1 μ m are formed just below the oxide films and formed on the steel base, whereby the adhesiveness between the films and the base is enhanced. The ferritic heat-resistant steel consists of: C from 0.02 to 0.18%, Si up to 1.0%, Mn up to 1.5%, P up to 0.030%, S up to 0.015%, Cr from 8.0 to 13.0%, Mo up to 2%, W up to 4%, with W + 2Mo \leq 4% V from 0.10 to 0.50%, Nb from 0.02 to 0.14% either Ti and/or Y, with 0.01 \leq Ti + Y \leq 0.30% either Rh and/or Ir, with 0.3% \leq Rh + (1/2)Ir \leq 5% either Pd and/or Pt in a total amount between 0.3 and 5% balance Fe

IPC 1-7

C22C 38/24; **C22C 38/26**; **C22C 38/22**

IPC 8 full level

C21D 1/18 (2006.01); **C21D 8/00** (2006.01); **C22C 38/00** (2006.01); **C22C 38/22** (2006.01); **C22C 38/24** (2006.01); **C22C 38/26** (2006.01); **C21D 1/28** (2006.01); **C21D 8/02** (2006.01)

CPC (source: EP US)

C21D 1/18 (2013.01 - EP US); **C21D 6/002** (2013.01 - EP US); **C21D 8/005** (2013.01 - EP US); **C22C 38/002** (2013.01 - EP US); **C22C 38/005** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/22** (2013.01 - EP US); **C22C 38/24** (2013.01 - EP US); **C22C 38/26** (2013.01 - EP US); **C22C 38/28** (2013.01 - EP US); **F28F 19/06** (2013.01 - EP US); **C21D 1/28** (2013.01 - EP US); **C21D 8/0205** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US)

Citation (search report)

- [XA] GB 2079787 A 19820127 - RENAULT
- [XA] US 4018569 A 19770419 - CHANG DAVID R
- [A] US 4405369 A 19830920 - OTOGURO YASUO [JP], et al
- [A] US 3847600 A 19741112 - MIMINO T, et al
- [A] EP 0199046 A1 19861029 - NIPPON STEEL CORP [JP]
- [A] US 3932174 A 19760113 - STREICHER MICHAEL A
- [XA] PATENT ABSTRACTS OF JAPAN vol. 005, no. 168 (C - 077) 27 October 1981 (1981-10-27)
- [XA] PATENT ABSTRACTS OF JAPAN vol. 1997, no. 06 30 June 1997 (1997-06-30)
- [XA] PATENT ABSTRACTS OF JAPAN vol. 1996, no. 11 29 November 1996 (1996-11-29)
- [XA] PATENT ABSTRACTS OF JAPAN vol. 1997, no. 07 31 July 1997 (1997-07-31)
- [A] PATENT ABSTRACTS OF JAPAN vol. 013, no. 208 (C - 596) 16 May 1989 (1989-05-16)
- [A] PATENT ABSTRACTS OF JAPAN vol. 005, no. 004 (C - 038) 13 January 1981 (1981-01-13)
- [A] PATENT ABSTRACTS OF JAPAN vol. 015, no. 276 (M - 1135) 12 July 1991 (1991-07-12)

Cited by

WO2011154515A1

Designated contracting state (EPC)

BE DE

DOCDB simple family (publication)

EP 0903421 A1 19990324; **EP 0903421 B1 20041124**; DE 69827729 D1 20041230; DE 69827729 T2 20050428; DE 69829012 D1 20050317; DE 69829012 T2 20050707; DE 69837055 D1 20070322; DE 69837055 T2 20071108; EP 1329531 A2 20030723; EP 1329531 A3 20030730; EP 1329531 B1 20070207; EP 1329531 B8 20070919; EP 1329532 A2 20030723; EP 1329532 A3 20030730; EP 1329532 B1 20050209; EP 1329532 B8 20070919; US 2002011285 A1 20020131; US 2003127163 A1 20030710; US 2004060621 A1 20040401; US 2006054253 A1 20060316

DOCDB simple family (application)

EP 98307629 A 19980921; DE 69827729 T 19980921; DE 69829012 T 19980921; DE 69837055 T 19980921; EP 03007332 A 19980921; EP 03007333 A 19980921; US 15739298 A 19980921; US 19903102 A 20020722; US 25049205 A 20051017; US 67387903 A 20030930