Title (en)

Method of producing heat-resistant high chromium ferritic/martensitic steel

Title (de)

Verfahren zur Herstellung von hitzebeständigem Chrom-reichem ferritisch-martensitischem Stahl

Title (fr)

Procédé de production d'acier ferritique-martensitique à haute teneur en chrome résistant à la chaleur

Publication

EP 1544312 A1 20050622 (EN)

Application

EP 04078288 A 20041203

Priority

KR 20030094059 A 20031219

Abstract (en)

Disclosed is a method of producing heat-resistant high chromium ferritic/martensitic steel, in detail, a method of producing the heat-resistant high chromium ferritic/martensitic steel, which includes melting, hot working, and heat treatment processes. In this regard, the heat treatment process includes a normalizing step at 1030 - 1100 DEG C (first process), a first tempering step at 620 - 720 DEG C (second process), and a second tempering step at 730 - 780 DEG C (third process). In the heat-resistant high chromium ferritic/martensitic steel, chromium carbonitride with a size of tens of nanometers is distributed to greatly stabilize the structure of the martensite lath, thereby enabling the heat-resistant high chromium ferritic/martensitic steel to have superior impact properties and creep rupture strength. The heat-resistant high chromium ferritic/martensitic steel is usefully applied to nuclear fuel claddings, heat transfer tubes, and pipes of nuclear power plants, and pipes, tubes, turbines and the like for the boilers of fossil power plants, which must have superior creep rupture strength and impact properties at a high temperature of about 600 DEG C. <IMAGE>

IPC 1-7

C21D 1/28; C22C 38/22; C22C 38/26

IPC 8 full level

C21D 1/28 (2006.01); **C21D 6/00** (2006.01); **C21D 9/00** (2006.01); **C21D 9/08** (2006.01); **C22C 38/00** (2006.01); **C22C 38/22** (2006.01); **C22C 38/26** (2006.01); **C22C 38/48** (2006.01); C21D 1/78 (2006.01); C21D 6/02 (2006.01)

CPC (source: EP KR)

C21D 1/28 (2013.01 - EP); **C21D 6/00** (2013.01 - KR); **C21D 6/002** (2013.01 - EP); **C22C 38/04** (2013.01 - EP); **C22C 38/22** (2013.01 - EP); **C22C 38/26** (2013.01 - EP); C21D 1/78 (2013.01 - EP); C21D 6/02 (2013.01 - EP)

Citation (search report)

- [X] GB 1189347 A 19700422 - NIPPON KOKAN KK [JP]
- [A] WO 02081766 A1 20021017 - V & M FRANCE [FR], et al
- [A] EP 0219089 A2 19870422 - SUMITOMO METAL IND [JP], et al
- [X] PATENT ABSTRACTS OF JAPAN vol. 1995, no. 08 29 September 1995 (1995-09-29)
- [X] PATENT ABSTRACTS OF JAPAN vol. 1997, no. 01 31 January 1997 (1997-01-31)

Cited by

CN103409606A; CN112626316A; CN105671255A; US8444782B2; CN109594019A; CN115354227A; US10316379B2; EP2764127B1

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