

Title (en)

STEEL MATERIAL HAVING A HIGH SILICON CONTENT FOR PRODUCING PISTON RINGS AND CYLINDER SLEEVES

Title (de)

HOCHSILIZIUMHALTIGER STAHLWERKSTOFF ZUR HERSTELLUNG VON KOLBENRINGEN UND ZYLINDERLAUFBUCHSEN

Title (fr)

MATÉRIAU ACIER À HAUTE TENEUR EN SILICIUM UTILISÉ POUR PRODUIRE DES SEGMENTS DE PISTONS ET DES CHEMISES DE CYLINDRES

Publication

**EP 2052094 B1 20161102 (DE)**

Application

**EP 07724936 A 20070507**

Priority

- EP 2007004012 W 20070507
- DE 102006038670 A 20060817

Abstract (en)

[origin: WO2008019717A1] The invention relates to a steel material having a high silicon content, and to a method for the production thereof, said steel material being particularly suitable for piston rings and cylinder sleeves. In addition to iron and production-related impurities, said steel material contains 0.5 to 1.2 wt.% carbon, 3.0 to 15.0 wt.% silicon and 0.5 to 4.5 wt.% nickel. Also, said steel material can contain small amounts of the following elements Mo, Mn, Al, Co, Nb, Ti, V, Sn, Mg, B, Te, Ta, La, Bi, Zr, Sb, Ca, Sr, Cer, rare earth metals and nucleating agents such as NiMg, NiSiMg, FeMg and FeSiMg. Due to the high Si content, a degree of saturation higher than 1,0 is attained, with the melting temperature of the steel material corresponding to normal cast iron. The steel material can be produced according to a conventional cast-iron technique and has a high resistance to wear and tear and a high structural strength (minimal distortion).

IPC 8 full level

**C22C 37/00** (2006.01); **C21D 1/25** (2006.01); **C22C 38/02** (2006.01)

CPC (source: EP US)

**C22C 38/02** (2013.01 - EP US); **C22C 38/08** (2013.01 - EP US); **C21D 1/25** (2013.01 - EP US); **C21D 5/00** (2013.01 - EP US)

Designated contracting state (EPC)

DE FR GB IT PT SE

DOCDB simple family (publication)

**DE 102006038670 A1 20080221**; **DE 102006038670 B4 20101209**; BR PI0716492 A2 20140225; BR PI0716492 B1 20180911; EP 2052094 A1 20090429; EP 2052094 B1 20161102; JP 2010501044 A 20100114; JP 5669392 B2 20150212; PT 2052094 T 20161228; US 2010192895 A1 20100805; US 8241559 B2 20120814; WO 2008019717 A1 20080221

DOCDB simple family (application)

**DE 102006038670 A 20060817**; BR PI0716492 A 20070507; EP 07724936 A 20070507; EP 2007004012 W 20070507; JP 2009524082 A 20070507; PT 07724936 T 20070507; US 37778907 A 20070507