

Title (en)

HIGH-TENSILE STRENGTH STEEL AND MANUFACTURING METHOD THEREOF

Title (de)

STAHL MIT HOHER BRUCHFESTIGKEIT UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)

ACIER AYANT UNE RÉSISTANCE À LA TRACTION ÉLEVÉE ET SON PROCÉDÉ DE FABRICATION

Publication

**EP 2272994 A1 20110112 (EN)**

Application

**EP 09726619 A 20090327**

Priority

- JP 2009056906 W 20090327
- JP 2008089648 A 20080331

Abstract (en)

Proposed are a high-tensile strength steel that is excellent in strength and toughness of the base material and also excellent in toughness of the weld heated zone, even if the steel has a large thick, and a method of advantageously manufacturing the steel. Specifically, the high-tensile strength steel has a component composition including, in mass%, C: 0.03 to 0.10%, Si: 0.30% or less, Mn: 1.60 to 2.30%, P: 0.015% or less, S: 0.005% or less, Al: 0.005 to 0.06%, Nb: 0.004 to 0.05%, Ti: 0.005 to 0.02%, N: 0.001 to 0.005%, Ca: 0.0005 to 0.003%, and the balance of Fe and inevitable impurities so that Ca, S, and O satisfy the following expression (1):  $0 < Ca - 0.18 + 130 \times Ca \times O / 1.25 / S < 1$  wherein, Ca, S, and O represent the respective contents (mass%) of the elements.

IPC 8 full level

**C22C 38/14** (2006.01); **C21D 8/02** (2006.01); **C22C 38/58** (2006.01)

CPC (source: CN EP KR)

**C21D 8/005** (2013.01 - KR); **C21D 8/0226** (2013.01 - CN EP); **C21D 8/0263** (2013.01 - EP); **C22C 38/001** (2013.01 - CN EP KR); **C22C 38/002** (2013.01 - CN EP KR); **C22C 38/02** (2013.01 - CN EP KR); **C22C 38/04** (2013.01 - CN EP KR); **C22C 38/06** (2013.01 - CN EP KR); **C22C 38/08** (2013.01 - CN); **C22C 38/12** (2013.01 - CN EP KR); **C22C 38/14** (2013.01 - CN EP KR); **C22C 38/16** (2013.01 - CN); **C22C 38/18** (2013.01 - CN); **C22C 38/32** (2013.01 - CN); **C22C 38/58** (2013.01 - KR); **C22C 2202/00** (2013.01 - KR)

Cited by

US2022411890A1; US10300564B2; EP2975148A4; BE1020801A3; EP3006587A4; US10023946B2; US9777358B2; US10450627B2; US10316385B2; US9790579B2

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA RS

DOCDB simple family (publication)

**EP 2272994 A1 20110112**; **EP 2272994 A4 20140108**; **EP 2272994 B1 20141112**; CN 102124133 A 20110713; CN 105821313 A 20160803; JP 2009263777 A 20091112; JP 5439887 B2 20140312; KR 20100116701 A 20101101; KR 20130035277 A 20130408; KR 20150094793 A 20150819; WO 2009123292 A1 20091008

DOCDB simple family (application)

**EP 09726619 A 20090327**; CN 200980111883 A 20090327; CN 201610206206 A 20090327; JP 2009056906 W 20090327; JP 2009073113 A 20090325; KR 20107021621 A 20090327; KR 20137005580 A 20090327; KR 20157021337 A 20090327