

Title (en)

HIC-RESISTANT THICK STEEL SHEET AND UOE STEEL PIPE

Title (de)

HIC-BESTÄNDIGES DICKES STAHLBLECH UND UOE-STAHLSROHR

Title (fr)

FEUILLE D'ACIER ÉPAIS RÉSISTANT DE HIC ET TUYAU EN ACIER FABRIQUÉ SELON LE PROCÉDÉ UOE

Publication

EP 2407570 A4 20160622 (EN)

Application

EP 10750916 A 20100312

Priority

- JP 2010054173 W 20100312
- JP 2009059639 A 20090312

Abstract (en)

[origin: EP2407570A1] A thick steel plate and a UOE steel pipe having a high strength of at least X60 grade and improved resistance to HIC have a chemical composition consisting essentially of, in mass percent, C: 0.02 - 0.07%, Si: 0.05 - 0.50%, Mn: 1.1 - 1.6%, P: at most 0.015%, S: at most 0.002%, Nb: 0.005 - 0.060%, Ti: 0.005 - 0.030%, Al: 0.005 - 0.06%, Ca: 0.0005 - 0.0060%, N: 0.0015 - 0.007%, at least one of Cu, Ni, Cr, and Mo in a total amount of greater than 0.1% and less than 1.5%, and a remainder of Fe and impurities, wherein the degrees of segregation of Nb and Ti are both at most 2.0, and the ratio of (the degree of Nb segregation) / (the degree of Mn segregation) and the ratio of (the degree of Ti segregation) / (the degree of Mn segregation) are both at least 1.0 and at most 1.5.

IPC 8 full level

C22C 38/00 (2006.01); **B21B 1/38** (2006.01); **B21B 3/00** (2006.01); **B21C 37/08** (2006.01); **C21D 1/06** (2006.01); **C21D 8/02** (2006.01); **C21D 9/08** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/12** (2006.01); **C22C 38/14** (2006.01); **C22C 38/58** (2006.01)

CPC (source: EP KR US)

B21C 37/08 (2013.01 - EP KR US); **C21D 1/06** (2013.01 - EP KR US); **C21D 8/0247** (2013.01 - EP KR US); **C21D 9/08** (2013.01 - EP KR US); **C22C 38/001** (2013.01 - EP KR US); **C22C 38/002** (2013.01 - EP KR US); **C22C 38/02** (2013.01 - EP KR US); **C22C 38/04** (2013.01 - EP KR US); **C22C 38/06** (2013.01 - EP KR US); **C22C 38/12** (2013.01 - EP KR US); **C22C 38/14** (2013.01 - EP KR US)

Citation (search report)

- [X] JP 2005264217 A 20050929 - JFE STEEL KK
- [X] JP 2008007841 A 20080117 - SUMITOMO METAL IND
- [X] JP H06220577 A 19940809 - KAWASAKI STEEL CO
- [A] JP 2002363689 A 20021218 - SUMITOMO METAL IND
- [A] JP 2006063351 A 20060309 - SUMITOMO METAL IND
- [A] JP H07173536 A 19950711 - NIPPON STEEL CORP
- [A] EP 1746175 A1 20070124 - SUMITOMO METAL IND [JP]
- See references of WO 2010104165A1

Cited by

EP2813596A4; US9790579B2; WO2013114519A1; WO2014024234A1

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 SM TR

DOCDB simple family (publication)

EP 2407570 A1 20120118; **EP 2407570 A4 20160622**; CA 2755271 A1 20100916; CN 102421926 A 20120418; JP WO2010104165 A1 20120913; KR 20110123807 A 20111115; RU 2011141268 A 20130420; US 2012121453 A1 20120517; WO 2010104165 A1 20100916

DOCDB simple family (application)

EP 10750916 A 20100312; CA 2755271 A 20100312; CN 201080020905 A 20100312; JP 2010054173 W 20100312; JP 2011503869 A 20100312; KR 20117023642 A 20100312; RU 2011141268 A 20100312; US 201113228819 A 20110909