

Title (en)
STEEL SHEET FOR HIGH STRENGTH LINE PIPE WITH EXCELLENT LOW TEMPERATURE TOUGHNESS AND STEEL PIPE FOR HIGH STRENGTH LINE PIPE

Title (de)
STAHLBLECH FÜR HOCHFESTES LEITUNGSROHR MIT HERVORRAGENDER NIEDRIGTEMPERATURBESTÄNDIGKEIT UND STAHLROHR FÜR HOCHFESTES LEITUNGSROHR

Title (fr)
TÔLE D'ACIER POUR TUBE DE CANALISATION HAUTE RÉSISTANCE AYANT UNE EXCELLENTE TÉNACITÉ À BASSE TEMPÉRATURE ET TUBE D'ACIER POUR TUBE DE CANALISATION HAUTE RÉSISTANCE

Publication
EP 3282028 A4 20181107 (EN)

Application
EP 16776617 A 20160407

Priority

- JP 2015081206 A 20150410
- JP 2016061381 W 20160407

Abstract (en)
[origin: EP3282028A1] To provide a high strength line pipe that is excellent in the low temperature toughness, particularly, in both the CTOD properties and DWTT properties. The steel sheet contains oxide particles with a circle equivalent diameter of 2 μm or more at a density of 10 particles/mm² or less in a t/2 position where t is a sheet thickness of the steel sheet, and the steel sheet satisfies that in the t/2 position, an average circle equivalent diameter of crystal grains enclosed by high angle grain boundaries in each of which a misorientation between two adjacent crystals is 15° or more is 10 μm or less, and that in the t/2 position, a fraction of a hard phase is 5 area% or less, while a separation index SI measured from a fracture surface of a Charpy impact test specimen of the steel sheet at a specific temperature is 0.15 mm/mm² or less.

IPC 8 full level
C22C 38/00 (2006.01); **C21C 7/04** (2006.01); **C21D 8/02** (2006.01); **C22C 38/14** (2006.01); **C22C 38/58** (2006.01)

CPC (source: EP KR)
C21C 7/0006 (2013.01 - EP); **C21D 8/0226** (2013.01 - EP); **C21D 9/46** (2013.01 - EP); **C22C 38/001** (2013.01 - EP); **C22C 38/002** (2013.01 - EP); **C22C 38/005** (2013.01 - EP KR); **C22C 38/02** (2013.01 - EP KR); **C22C 38/04** (2013.01 - EP KR); **C22C 38/06** (2013.01 - EP KR); **C22C 38/08** (2013.01 - EP); **C22C 38/12** (2013.01 - EP KR); **C22C 38/14** (2013.01 - EP KR); **C22C 38/16** (2013.01 - EP); **C22C 38/20** (2013.01 - EP); **C22C 38/22** (2013.01 - EP); **C22C 38/24** (2013.01 - EP); **C22C 38/26** (2013.01 - EP); **C22C 38/28** (2013.01 - EP); **C22C 38/42** (2013.01 - EP); **C22C 38/44** (2013.01 - EP); **C22C 38/46** (2013.01 - EP); **C22C 38/48** (2013.01 - EP); **C22C 38/50** (2013.01 - EP); **C22C 38/58** (2013.01 - EP); **C21C 7/04** (2013.01 - EP); **C21D 8/02** (2013.01 - EP)

Citation (search report)

- [A] JP 5342902 B2 20131113
- [A] JP 2009138255 A 20090625 - KOBE STEEL LTD
- [A] EP 2644729 A2 20131002 - KOBE STEEL LTD [JP]
- [A] WO 2014045829 A1 20140327 - KOBE STEEL LTD [JP]
- [A] WO 2015022899 A1 20150219 - NIPPON STEEL & SUMITOMO METAL CORP [JP]
- [A] EP 2592169 A1 20130515 - NIPPON STEEL & SUMITOMO METAL CORP [JP]
- See references of WO 2016163451A1

Designated contracting state (EPC)
AL 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 RS SE SI SK SM TR

DOCDB simple family (publication)
EP 3282028 A1 20180214; **EP 3282028 A4 20181107**; CN 107532254 A 20180102; JP 2016199806 A 20161201; KR 20170118899 A 20171025; WO 2016163451 A1 20161013

DOCDB simple family (application)
EP 16776617 A 20160407; CN 201680020129 A 20160407; JP 2016061381 W 20160407; JP 2016076850 A 20160406; KR 20177026744 A 20160407