

Title (en)  
THICK STEEL PLATE

Title (de)  
DICKE STAHLPLATTE

Title (fr)  
PLAQUE D'ACIER ÉPAISSE

Publication  
**EP 3147379 A4 20171004 (EN)**

Application  
**EP 15795946 A 20150515**

Priority  
• JP 2014106307 A 20140522  
• JP 2015086047 A 20150420  
• JP 2015064099 W 20150515

Abstract (en)  
[origin: EP3147379A1] Disclosed is a steel plate. The steel plate has a chemical composition meeting predetermined conditions. A microstructure in the surface layer of the steel plate includes at least one of ferrite and upper bainite in a total fraction of 80 area percent or more, and grains of the at least one of ferrite and upper bainite have an effective grain size of 10.0  $\mu\text{m}$  or less. Of the microstructure of the surface layer, grains of the remainder microstructure excluding the ferrite and the upper bainite have an average equivalent circle diameter of 3.0  $\mu\text{m}$  or less. The steel plate has a dislocation density  $\dot{A}$  of  $2.5 \times 10^{15} \text{ m}^{-1}$  or less as determined by X-ray diffractometry. The steel plate having the configuration has excellent fatigue properties.

IPC 8 full level  
**C22C 38/00** (2006.01); **C21D 8/02** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/16** (2006.01); **C22C 38/18** (2006.01); **C22C 38/20** (2006.01); **C22C 38/38** (2006.01); **C22C 38/58** (2006.01)

CPC (source: EP KR)  
**C21D 8/02** (2013.01 - EP); **C22C 38/02** (2013.01 - EP KR); **C22C 38/04** (2013.01 - EP KR); **C22C 38/06** (2013.01 - KR); **C22C 38/12** (2013.01 - KR); **C22C 38/14** (2013.01 - KR); **C22C 38/16** (2013.01 - EP KR); **C22C 38/18** (2013.01 - EP); **C22C 38/20** (2013.01 - EP); **C22C 38/38** (2013.01 - EP); **C22C 38/58** (2013.01 - EP); **C21D 2211/002** (2013.01 - KR); **C21D 2211/005** (2013.01 - KR)

Citation (search report)  
• [X] JP 2012172256 A 20120910 - JFE STEEL CORP  
• [A] JP S6415319 A 19890119 - KAWASAKI STEEL CO  
• [A] JP 2008297575 A 20081211 - KOBE STEEL LTD  
• [A] JP 2007197823 A 20070809 - JFE STEEL KK  
• [A] EP 2157203 A1 20100224 - KOBE STEEL LTD [JP]  
• [A] EP 2006407 A1 20081224 - NIPPON STEEL CORP [JP]  
• See references of WO 2015178320A1

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 3147379 A1 20170329**; **EP 3147379 A4 20171004**; **EP 3147379 B1 20200805**; CN 106460114 A 20170222; CN 106460114 B 20180406; EP 3656886 A1 20200527; JP 2016000855 A 20160107; JP 6472315 B2 20190220; KR 102218806 B1 20210222; KR 20160144439 A 20161216; KR 20180115352 A 20181022; WO 2015178320 A1 20151126

DOCDB simple family (application)  
**EP 15795946 A 20150515**; CN 201580025803 A 20150515; EP 19220022 A 20150515; JP 2015064099 W 20150515; JP 2015086047 A 20150420; KR 20167031274 A 20150515; KR 20187029512 A 20150515