

Title (en)

STEEL PLATE HAVING EXCELLENT HYDROGEN-INDUCED CRACKING RESISTANCE AND STEEL PIPE FOR LINE PIPE

Title (de)

STAHLPLATTE MIT AUSGEZEICHNETEM WIDERSTAND GEGENÜBER WASSERSTOFFINDUZIERTER RISSBILDUNG UND STAHLROHR FÜR LEITUNGSROHR

Title (fr)

TÔLE D'ACIER PRÉSENTANT UNE EXCELLENTE RÉSISTANCE À LA FISSURATION INDUITE PAR L'HYDROGÈNE ET TUBE D'ACIER POUR TUYAU DE CANALISATION

Publication

EP 3239319 A4 20180627 (EN)

Application

EP 15873094 A 20151222

Priority

- JP 2014266491 A 20141226
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Abstract (en)

[origin: EP3239319A1] A steel plate and a steel pipe with excellent hydrogen-induced cracking resistance are achieved. Further, the steel plate and steel pipe are achieved that can evaluate the hydrogen-induced cracking resistance based on the quality of an internal structure of a cast strip without executing a hydrogen-induced cracking test after rolling. The steel plate having the excellent hydrogen-induced cracking resistance satisfies the specified contents of C, Si, Mn, P, S, Al, Ca, N, and O, and further contains the specified content of one or more elements selected from the group consisting of REM and Zr, with the balance being iron and inevitable impurities. The steel plate is further characterized by that the ratio (Ca/S) of the Ca to the S is 2.0 or more, the Ca, the S, and the O satisfies the relationship of $(Ca - 1.25S) / O \neq 1.80$, and a decrease in an amount of Ca obtained by subtracting a Ca concentration in a slab from a Ca concentration in a molten steel in a tundish is a threshold value Ca drop, or less, the threshold value Ca drop, being a maximum decrease in an amount of Ca that avoids the occurrence of hydrogen-induced cracking in the steel plate obtained by rolling the slab.

IPC 8 full level

C22C 38/00 (2006.01); **C21C 7/04** (2006.01); **C21D 8/02** (2006.01); **C21D 8/10** (2006.01); **C21D 9/08** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/08** (2006.01); **C22C 38/12** (2006.01); **C22C 38/14** (2006.01); **C22C 38/16** (2006.01); **C22C 38/58** (2006.01); **C21D 1/18** (2006.01)

CPC (source: EP KR)

C21D 8/0221 (2013.01 - KR); **C21D 8/0226** (2013.01 - EP); **C21D 8/0263** (2013.01 - EP); **C21D 8/105** (2013.01 - EP); **C21D 9/08** (2013.01 - EP); **C22C 38/001** (2013.01 - EP); **C22C 38/002** (2013.01 - EP); **C22C 38/004** (2013.01 - KR); **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); **C22C 38/14** (2013.01 - EP KR); **C22C 38/16** (2013.01 - EP); **C22C 38/58** (2013.01 - EP KR); **C21D 1/18** (2013.01 - EP); **C21D 8/02** (2013.01 - EP)

Citation (search report)

- [E] EP 3018231 A1 20160511 - KOBEL STEEL LTD [JP]
- [X] JP 2014208891 A 20141106 - KOBEL STEEL LTD
- [X] JP 2014208892 A 20141106 - KOBEL STEEL LTD
- [A] JP 2014173892 A 20140922 - KOBEL STEEL LTD
- [A] JP 2014173893 A 20140922 - KOBEL STEEL LTD
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