

Title (en)

HIGH-STRENGTH STAINLESS STEEL SEAMLESS PIPE FOR OIL WELLS

Title (de)

NAHTLOSES ROHR AUS HOCHFESTEM ROSTFREIEM STAHL FÜR ÖLBOHRLÖCHER

Title (fr)

TUYAU SANS SOUDURE EN ACIER INOXYDABLE À HAUTE RÉSISTANCE POUR PUITS DE PÉTROLE

Publication

EP 4043591 A4 20221012 (EN)

Application

EP 20904807 A 20201120

Priority

- JP 2019232430 A 20191224
- JP 2020043310 W 20201120

Abstract (en)

[origin: EP4043591A1] To provide a high-strength seamless stainless steel pipe for oil well that has high strength, is excellent in hot workability, has excellent carbon dioxide gas corrosion resistance, and is excellent in SSC resistance under a low temperature environment. A high-strength seamless stainless steel pipe for oil well having a composition containing the particular components, the balance being Fe and unavoidable impurities, and satisfying the following expression (1) and the following expression (2), having a number density of an inclusion having a major axis of 5 μm or more and $0.5 < \text{Ti}/(\text{Ti}+\text{Al}+\text{Mg}+\text{Ca}) < 1.0$ of 0.5 per mm² or more and 3 per mm² or less, and having a yield strength of 655 MPa or more, wherein in $0.5 < \text{Ti}/(\text{Ti}+\text{Al}+\text{Mg}+\text{Ca}) < 1.0$, Ti, Al, Mg, and Ca represent the contents (% by mass) of the elements in the inclusion, and an element that is not contained is designated as 0, $\text{Cr}+0.65\text{Ni}+0.6\text{Mo}+0.55\text{Cu}-20\text{C} \geq 15.0$
(1) $\text{Cr}+\text{Mo}+0.3\text{Si}-43.3\text{C}-0.4\text{Mn}-\text{Ni}-0.3\text{Cu}-9\text{N} \leq 11.0$ (2) wherein Cr, Ni, Mo, Cu, C, Si, Mn, and N represent the contents (% by mass) of the elements, and an element that is not contained is designated as 0.

IPC 8 full level

C22C 38/44 (2006.01); **C21D 1/18** (2006.01); **C21D 1/22** (2006.01); **C21D 1/25** (2006.01); **C21D 6/00** (2006.01); **C21D 6/02** (2006.01); **C21D 8/10** (2006.01); **C21D 9/08** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/42** (2006.01); **C22C 38/46** (2006.01); **C22C 38/48** (2006.01); **C22C 38/50** (2006.01); **C22C 38/52** (2006.01); **C22C 38/54** (2006.01)

CPC (source: EP US)

C21D 1/18 (2013.01 - EP); **C21D 1/22** (2013.01 - EP); **C21D 1/25** (2013.01 - EP); **C21D 6/004** (2013.01 - EP); **C21D 6/02** (2013.01 - EP); **C21D 8/105** (2013.01 - EP); **C21D 9/08** (2013.01 - EP US); **C21D 9/085** (2013.01 - EP); **C22C 38/001** (2013.01 - EP US); **C22C 38/002** (2013.01 - EP US); **C22C 38/004** (2013.01 - EP US); **C22C 38/005** (2013.01 - EP); **C22C 38/008** (2013.01 - EP); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US); **C22C 38/42** (2013.01 - EP); **C22C 38/44** (2013.01 - EP US); **C22C 38/46** (2013.01 - EP US); **C22C 38/48** (2013.01 - EP); **C22C 38/50** (2013.01 - EP US); **C22C 38/52** (2013.01 - EP US); **C22C 38/54** (2013.01 - EP); **C21D 2211/001** (2013.01 - US); **C21D 2211/004** (2013.01 - EP); **C21D 2211/008** (2013.01 - EP)

Citation (search report)

- [X] EP 3438305 A1 20190206 - JFE STEEL CORP [JP]
- [X] WO 2019065116 A1 20190404 - JFE STEEL CORP [JP]
- [X] WO 2019065115 A1 20190404 - JFE STEEL CORP [JP]
- [X] WO 2019065114 A1 20190404 - JFE STEEL CORP [JP]
- [X] WO 2019225281 A1 20191128 - JFE STEEL CORP [JP]
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- [X] JP 2010242163 A 20101028 - JFE STEEL CORP
- See references of WO 2021131445A1

Designated contracting state (EPC)

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DOCDB simple family (application)

EP 20904807 A 20201120; AR P200103614 A 20201222; BR 112022011761 A 20201120; CN 202080087895 A 20201120; JP 2020043310 W 20201120; JP 2021510991 A 20201120; MX 2022007286 A 20201120; US 202017785164 A 20201120