

Title (en)
LOW-ALLOY STEEL, SEAMLESS STEEL PIPE FOR OIL WELL, AND PROCESS FOR PRODUCING SEAMLESS STEEL PIPE

Title (de)
STAHL MIT GERINGEM LEGIERUNGSANTEIL, NAHTLOSES STAHLROHR FÜR EIN ÖLBOHRLOCH UND VERFAHREN ZUR HERSTELLUNG DES NAHTLOSEN STAHLROHRS

Title (fr)
ACIER FAIBLEMENT ALLIÉ, CONDUIT EN ACIER SANS SOUDURE POUR PUITS DE PÉTROLE ET PROCÉDÉ DE FABRICATION D'UN CONDUIT EN ACIER SANS SOUDURE

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Application
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Priority

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Abstract (en)
[origin: EP2133442A1] A low alloy steel comprising, by mass %, C : 0.10 to 0.20%, Si : 0.05 to 1.0%, Mn : 0.05 to 1.5%, Cr : 1.0 to 2.0%, Mo : 0.05 to 2.0%, Al : 0.10 % or less and Ti : 0.002 to 0.05%, and with a Ceq value obtained by the following formula (1) of 0.65 or more, with the balance being Fe and impurities, wherein in the impurities, P is 0.025% or less, S is 0.010% or less, N is 0.007% or less, and B is less than 0.0003%, and the number per unit area of M 23 C 6 type precipitates (M: a metal element) whose grain diameter is 1 µm or more is 0.1/mm² or less. This invention provides a low alloy steel possessing both hardenability and toughness and improves the resistance to sulfide stress corrosion cracking. $Ceq = C + Mn / 6 + Cr + Mo + V / 5$ where C, Mn, Cr, Mo and V in the formula (1) denote the mass % of respective elements.

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Citation (search report)

- [X] EP 1413639 A1 20040428 - SUMITOMO METAL IND [JP]
- [X] US 2006231168 A1 20061019 - NAKAMURA KEIICHI [JP], et al
- [X] JP S54119324 A 19790917 - KAWASAKI STEEL CO
- [I] EP 1712651 A1 20061018 - SUMITOMO METAL IND [JP]
- [I] US 2006219333 A1 20061005 - SAMAMOTO MAKOTO [JP], et al
- [I] JP S6240345 A 19870221 - NIPPON KOKAN KK
- [I] JP S616208 A 19860111 - NIPPON STEEL CORP
- [AD] JP 2000017389 A 20000118 - SUMITOMO METAL IND
- [A] JP H0250915 A 19900220 - NIPPON STEEL CORP
- [A] JP 2003166037 A 20030613 - JAPAN MARINE SCI & TECHNOL CT, et al
- [A] JP S6046317 A 19850313 - SUMITOMO METAL IND
- [A] JP H07197125 A 19950801 - NIPPON KOKAN KK
- [A] JP H06172859 A 19940621 - NIPPON KOKAN KK

Cited by
EP2873747A4; AU2013319622B2; EP2492361A3; ITMI20110180A1; US11105501B2; US9970242B2; US8926771B2; US11124852B2; US9657365B2; US11952648B2; US11833561B2; US9982331B2; US10844669B2; US9644248B2; US9803256B2; US10378074B2; US10378075B2; US11377704B2

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