

Title (en)
CR-CONTAINING STEEL PIPE FOR LINE PIPE AND HAVING EXCELLENT INTERGRANULAR STRESS CORROSION CRACKING RESISTANCE AT WELDING-HEAT-AFFECTED PORTION

Title (de)
CR-HALTIGES STAHLROHR FÜR EIN LEITUNGSROHR MIT HERVORRAGENDER BRUCHFESTIGKEIT DER DURCH SCHWEISSUNGSHITZE BETROFFENEN TEILE BEI INTERGRANULARER STRESSKORROSION

Title (fr)
TUYAU D'ACIER CONTENANT DU CHROME POUR UNE CANALISATION AYANT UNE EXCELLENTE RÉSISTANCE À LA FISSURATION PAR CORROSION INTERGRANULAIRE SOUS CONTRAINTE DANS LA PARTIE AFFECTÉE PAR LA CHALEUR DE SOUDAGE

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Application
EP 11772096 A 20110415

Priority
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Abstract (en)
[origin: EP2562284A1] Provided is a Cr-containing steel pipe for linepipe having X-65 to X-80 class high strength and being excellent in toughness, corrosion resistance and resistance to sulfide stress corrosion cracking, and also being excellent in resistance to intergranular stress corrosion cracking in a welded heat affected zone. To be more specific, the composition of the Cr-containing steel pipe contains, by mass% 0.001 to 0.015% C, 0.05 to 0.50% Si, 0.10 to 2.0% Mn, 0.001 to 0.10% Al, 15.0 to 18.0% Cr, 2.0 to 6.0% Ni, 1.5 to 3.5% Mo, 0.001 to 0.20% V, and 0.015% or less N so as to satisfy the following relationship of $Cr + Mo + 0.4W + 0.3Si - 43.5C - 0.4Mn - Ni - 0.3Cu - 9N: 11.5 \text{ to } 13.3$. A welded heat affected zone which is heated to a ferrite single phase temperature region of 1300°C or more at the time of welding and is cooled has the microstructure where 50% or more of prior-ferrite grain boundaries is occupied by a martensite phase and/or an austenite phase in a ratio to the whole length of the prior-ferrite grain boundaries. Accordingly, the formation of a Cr carbide depleted zone is suppressed thus providing a steel pipe which remarkably enhances resistance to intergranular stress corrosion cracking in a welded heat affected zone. Due to such a steel pipe, it is possible to acquire an advantageous effect that it becomes unnecessary to perform post weld heat treatment thus remarkably shortening a construction period of the welded steel pipe structure.

IPC 8 full level
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• [X] US 2007074793 A1 20070405 - KIMURA MITSUO [JP], et al & CN 1875121 A 20061206 - JFE STEEL KK [JP]
• [X] JP 2001115238 A 20010424 - SUMITOMO METAL IND
• [X] JP 2001279392 A 20011010 - SUMITOMO METAL IND
• [X] JP 2002060910 A 20020228 - SUMITOMO METAL IND
• See references of WO 2011132765A1

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