

Title (en)

A METHOD OF MAKING A Cr-CONTAINING STEEL PIPE FOR LINEPIPE EXCELLENT IN INTERGRANULAR STRESS CORROSION CRACKING RESISTANCE OF WELDED HEAT AFFECTED ZONE

Title (de)

EINE METHODE ZUR HERSTELLUNG EINES CR-HALTIGEN STAHLROHRS FÜR EIN LEITUNGSROHR MIT HERVORRAGENDER BESTÄNDIGKEIT GEGEN INTERKRISTALLINE SPANNUNGSRISSKORROSION DER WÄRMEBEEINFLUSSTEN SCHWEISZZONE

Title (fr)

PROCÉDÉ DE FABRICATION D'UN TUBE D'ACIER CONTENANT DU Cr DESTINÉ À UN TUBE DE CANALISATION EXCELLENT EN TERMES DE RÉSISTANCE À LA FISSURATION INTERGRANULAIRE PAR CORROSION SOUS TENSION D'UNE ZONE SOUDÉE TOUCHÉE PAR LA CHALEUR

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Application

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Abstract (en)

A Cr containing steel pipe for linepipe having high strength of X65 to X80 grade excellent in toughness, corrosion resistance, resistance to sulfide stress cracking and resistance to IGSCC in a welded heat affected zone is provided. Specifically, the steel pipe has a chemical composition consisting of, by mass%, C: 0.001% to 0.015%, Si: 0.05% to 0.50%, Mn: 0.10% to 2.0%, Al: 0.001% to 0.10%, Cr: 13% or more and less than 15%, Ni: 2.0% to 5.0%, Mo: 1.5% to 3.5%, V: 0.001% to 0.20%, N: 0.015% or less, and the balance being Fe and inevitable impurities, under the condition that P_1 is 11.5 to 13.3 and that $P_2 = (0.5Cr + 5.0) - P_1$ is 0 or more. With this chemical composition, since a microstructure in a welded heat affected zone, which is subjected to heating up to a temperature range for forming ferrite single phase of 1300°C or higher and to cooling when welding is performed, is formed such that 50% or more of prior-ferrite grain boundaries, in a ratio with respect to the total length of the prior-ferrite grain boundaries, is occupied by martensite phase, and since formation of Cr carbide depleted zones is suppressed, a pipe having significantly increased resistance to IGSCC in a welded heat affected zone can be obtained. Since it is not necessary to perform a post weld treatment, there is a merit of significantly decreasing construction period of welded steel pipe structures.

IPC 8 full level

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