

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

Publication

**EP 2843068 B1 20201216 (EN)**

Application

**EP 12875045 A 20120426**

Priority

JP 2012061699 W 20120426

Abstract (en)

[origin: EP2843068A1] 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

**C22C 38/00** (2006.01); **C21D 6/00** (2006.01); **C21D 8/02** (2006.01); **C21D 9/50** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01); **C22C 38/48** (2006.01); **C22C 38/50** (2006.01); **C22C 38/58** (2006.01)

CPC (source: EP)

**C21D 9/50** (2013.01); **C22C 38/001** (2013.01); **C22C 38/002** (2013.01); **C22C 38/004** (2013.01); **C22C 38/005** (2013.01); **C22C 38/02** (2013.01); **C22C 38/04** (2013.01); **C22C 38/06** (2013.01); **C22C 38/42** (2013.01); **C22C 38/44** (2013.01); **C22C 38/46** (2013.01); **C22C 38/48** (2013.01); **C22C 38/50** (2013.01); **C22C 38/58** (2013.01); **C21D 6/004** (2013.01); **C21D 8/0226** (2013.01); **C21D 8/0263** (2013.01)

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**EP 2843068 A1 20150304**; **EP 2843068 A4 20150805**; **EP 2843068 B1 20201216**; BR 112014025818 B1 20190611; CN 104254625 A 20141231; WO 2013161089 A1 20131031

DOCDB simple family (application)

**EP 12875045 A 20120426**; BR 112014025818 A 20120426; CN 201280072699 A 20120426; JP 2012061699 W 20120426