

Title (en)
HIGH-STRENGTH STEEL MATERIAL HAVING EXCELLENT LOW-TEMPERATURE STRAIN AGING IMPACT PROPERTIES AND METHOD FOR MANUFACTURING SAME

Title (de)
HOCHFESTES STAHLMATERIAL MIT HERVORRAGENDEN TIEFTEMPORATURZÄHIGKEITSBEANSPRUCHUNGSEIGENSCHAFTEN SOWIE VERFAHREN ZUR HERSTELLUNG DAVON

Title (fr)
MATÉRIAU EN ACIER À HAUTE RÉSISTANCE AYANT D'EXCELLENTE PROPRIÉTÉS AU CHOC PAR VIEILLISSEMENT PAR CONTRAINTE À BASSE TEMPÉRATURE ET SON PROCÉDÉ DE FABRICATION

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EP 16876051 A 20161215

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Abstract (en)
The present invention relates to a steel material for pressure vessels, offshore structures and the like and, more specifically, to a high-strength steel material having excellent low-temperature strain aging impact properties and a method for manufacturing same, the high-strength steel material comprising 0.04-0.14 wt% of carbon (C), 0.05-0.60 wt% of silicon (Si), 0.6-1.8 wt% of manganese (Mn), 0.005-0.06 wt% of soluble aluminum (sol. Al), 0.005-0.05 wt% of niobium (Nb), 0.01 wt% or less (not including 0 wt%) of vanadium (V), 0.001-0.015 wt% of titanium (Ti), 0.01-0.4 wt% of copper (Cu), 0.01-0.6 wt% of nickel (Ni), 0.01-0.2 wt% of chromium (Cr), 0.001-0.3 wt% of molybdenum (Mo), 0.0002-0.0040 wt% of calcium (Ca), 0.001-0.006 wt% of nitrogen (N), 0.02 wt% or less (not including 0 wt%) of phosphorus (P), and 0.003 wt% or less (not including 0 wt%) of sulfur (S), with a balance of Fe and other inevitable impurities, and comprising a mixed structure of ferrite, pearlite, bainite and a martensite-austenite (MA) composite phase as a microstructure, wherein the fraction of the MA phase is 3.5% or less (not including 0%).

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