

Title (en)
ULTRAHIGH-STRENGTH COLD-ROLLED STEEL SHEET WITH EXCELLENT DUCTILITY AND DELAYED-FRACTURE RESISTANCE, AND
PROCESS FOR PRODUCING SAME

Title (de)
ULTRAHOCHFESTES KALTGEWALZTES STAHLBLECH MIT HERVORRAGENDER DUKTILITÄT UND VERZÖGERTER BRUCHFESTIGKEIT
SOWIE HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
TÔLE D'ACIER LAMINÉE À FROID À ULTRAHAUTE RÉSISTANCE PRÉSENTANT UNE EXCELLENTE DUCTILITÉ ET RÉSISTANCE À LA
RUPTURE DIFFÉRÉE, ET SON PROCÉDÉ DE PRODUCTION

Publication
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Application
EP 11800982 A 20110624

Priority
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Abstract (en)
[origin: EP2589674A1] Provided is an ultra-high-strength cold-rolled steel sheet having excellent delayed fracture resistance and a tensile strength of 1320 MPa or more and a method for manufacturing the same. The ultra-high-strength cold-rolled steel sheet has a steel composition that does not excessively contain a transition metal element, such as V or Mo, causing a significant increase in allowing cost or Al, which may possibly cause casting defects. An ultra-high-strength cold-rolled steel sheet with excellent ductility and delayed fracture resistance contains 0.15% to 0.25% C, 1.0% to 3.0% Si, 1.5% to 2.5% Mn, 0.05% or less P, 0.02% or less S, 0.01% to 0.05% Al, and less than 0.005% N on a mass ratio, the remainder being Fe and unavoidable impurities, and has a metal microstructure containing 40% to 85% of a tempered martensite phase and 15% to 60% of a ferrite phase on a volume fraction basis and a tensile strength of 1320 MPa or more.

IPC 8 full level
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CPC (source: EP KR US)
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Citation (search report)
• [X] JP 2010090432 A 20100422 - JFE STEEL CORP
• [XI] JP H11350038 A 19991221 - NIPPON KOKAN KK
• See references of WO 2012002520A1

Cited by
US10253387B2; EP4012055A4; EP4159886A4; EP3128026A4; EP3088547A4; EP3272892A4; EP3567132A4; US10329636B2; US10711322B2; US11293103B2

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