

Title (en)
HIGH-STRENGTH COLD-ROLLED STEEL SHEET HAVING EXCELLENT DEEP-DRAWABILITY AND BAKE HARDENABILITY, AND METHOD FOR MANUFACTURING SAME

Title (de)
HOCHFESTES KALTGEWALZTES STAHLBLECH MIT HERVORRAGENDER TIEFZIEHBARKEIT UND BRENNHÄRTBARKEIT SOWIE HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
TÔLE D'ACIER FORTE RÉSIDENCE LAMINÉE À FROID PRÉSENTANT UNE EXCELLENTE APTITUDE À L'EMBOUTISSAGE PROFOND ET AU DURCISSEMENT APRÈS CUISSON, ET SON PROCÉDÉ DE FABRICATION

Publication
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Application
EP 11837944 A 20111028

Priority
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• JP 2010248119 A 20101105
• JP 2011074939 W 20111028

Abstract (en)
[origin: EP2636762A1] A high-strength cold rolled steel sheet having excellent deep drawability and bake hardenability, which has a tensile strength of not less than 440 MPa, an average r-value of not less than 1.20 and a bake hardening value of not less than 40 MPa, is obtained by subjecting a steel raw material having a chemical composition comprising C: 0.010-0.06 mass%, Si: more than 0.5 mass% but not more than 1.5 mass%, Mn: 1.0-3.0 mass%, Nb: 0.010-0.090 mass%, Ti: 0.015-0.15 mass% and satisfying $(Nb/93)/(C/12) < 0.20$ to hot rolling, cold rolling and then to annealing comprising steps of heating to a temperature of 800-900°C while a temperature region of 700-800°C is an average heating rate of less than 3°C/s, and soaking and thereafter cooling at a rate of not less than 5°C/s from the soaking temperature to a cooling stop temperature of not higher than 500°C to thereby form a microstructure comprising ferrite phase with an area ratio of not less than 70% and martensite phase with an area ratio of not less than 3%.

IPC 8 full level
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CPC (source: EP US)
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Cited by
EP3778964A4; EP2767604A4; EP3255163A4; EP3438311A4; US11035019B2; US11946111B2; US11136636B2

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