

Title (en)
DOUBLE-ANNEALED STEEL SHEET HAVING HIGH MECHANICAL STRENGTH AND DUCTILITY CHARACTERISTICS, METHOD OF MANUFACTURE AND USE OF SUCH SHEETS

Title (de)
DOPPELGEGLÜHTES STAHLBLECH MIT HOHER MECHANISCHER FESTIGKEIT UND DUKTILITÄT, VERFAHREN ZUR HERSTELLUNG UND VERWENDUNG SOLCHER BLECHE

Title (fr)
TÔLE D'ACIER DOUBLEMENT RECUITE A HAUTES CARACTERISTIQUES MECANIKES DE RESISTANCE ET DE DUCTILITE, PROCEDE DE FABRICATION ET UTILISATION DE TELLES TÔLES

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Application
EP 15730241 A 20150507

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Abstract (en)
[origin: WO2015177582A1] The invention relates to a double-annealed steel sheet, the composition of which comprises, the contents being expressed as weight percentage, $0.20\% \leq C \leq 0.40\%$, $0.8\% \leq Mn \leq 1.4\%$, $1.60\% \leq Si \leq 3.00\%$, $0.015\% \leq Nb \leq 0.150\%$, $Al \leq 0.1\%$, $Cr \leq 1.0\%$, $S \leq 0.006\%$, $P \leq 0.030\%$, $Ti \leq 0.05\%$, $V \leq 0.05\%$, $B \leq 0.003\%$, $N \leq 0.01\%$, the rest of the composition consisting of iron and unavoidable impurities resulting from the production, the microstructure consisting, in surface area proportions, of 10% to 30% of residual austenite, of 30% to 60% of annealed martensite, of 5% to 30% of bainite, of 10% to 30% of fresh martensite and of less than 10% of ferrite. It also relates to the method for manufacturing same and also to the use of such a sheet.

IPC 8 full level
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CPC (source: CN EP KR RU US)
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Cited by
US11473160B2; DE102021128327A1; WO2019121793A1

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