

Title (en)  
STEEL SHEET WITH EXCELLENT COLD WORKABILITY DURING FORMING, AND PROCESS FOR PRODUCING SAME

Title (de)  
STAHLBLECH MIT AUSGEZEICHNETER KALTVERFORMBARKEIT BEIM UMFORMEN UND VERFAHREN ZUR HERSTELLUNG DAVON

Title (fr)  
TÔLE D'ACIER AYANT UNE EXCELLENTE APTITUDE AU FAÇONNAGE À FROID LORS DU FORMAGE ET SON PROCÉDÉ DE PRODUCTION

Publication  
**EP 3282032 A4 20180912 (EN)**

Application  
**EP 16776704 A 20160408**

Priority  
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• JP 2016061608 W 20160408

Abstract (en)  
[origin: EP3282032A1] The present invention provides a steel sheet having an excellent cold workability during forming and a method for producing the same. The steel sheet of the present invention is characterized in that: (a) the ratio of the number of carbides at the ferrite grain boundary to the number of carbides in the ferrite grain exceeds 1, (b) the ferrite grain diameter is 5 µm or more and 50 µm or less, (c) the in-plane anisotropy  $|r|$  of the  $r$  value is 0.2 or less, (d) the Vickers hardness is 100 HV or more and 150 HV or less, (e) the random intensity ratio of the  $\{311\} \langle 011 \rangle$  orientation at the 1/2-thickness portion of the steel sheet is 3.0 or less.

IPC 8 full level  
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Citation (search report)  
• [A] EP 1980635 A1 20081015 - JFE STEEL CORP [JP]  
• [A] EP 2003220 A1 20081217 - JFE STEEL CORP [JP]  
• [A] JP 2009263718 A 20091112 - NIPPON STEEL CORP  
• See references of WO 2016163538A1

Cited by  
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