

Title (en)  
THICK STEEL SHEET HAVING EXCELLENT WELDING HEAT-AFFECTED PART TOUGHNESS

Title (de)  
DICKES STAHLBLECH MIT HERVORRAGENDER ZÄHIGKEIT DER DURCH SCHWEISSWÄRME BEEINFLUSSTEN TEILE

Title (fr)  
FEUILLE D'ACIER ÉPAISSE AYANT UNE EXCELLENTE TÉNACITÉ DE PIÈCE AFFECTÉE PAR LA CHALEUR DE SOUDAGE

Publication  
**EP 2899289 A4 20160601 (EN)**

Application  
**EP 13838421 A 20130829**

Priority  
• JP 2012205840 A 20120919  
• JP 2013073223 W 20130829

Abstract (en)  
[origin: EP2899289A1] A steel plate according to the present invention has a predetermined chemical composition and contains specific oxide particles. The oxide particles include constituent elements excluding oxygen in contents, in mass percent, meeting the conditions: 2% < Ti < 40%, 5% < Al < 30%, 5% < Ca < 40%, 5% < REM < 50%, 2% < Zr < 30%, and 1.5 # REM/Zr. Of the oxide particles, those with an equivalent circle diameter of less than 2 µm are present in a number density of 300 or more per square millimeter, and those with an equivalent circle diameter of 2 µm or more are present in a number density of 100 or less per square millimeter. Of titanium nitride particles, those with an equivalent circle diameter of 1 µm or more are present in a number density of 7 or less per square millimeter, and those with an equivalent circle diameter of 20 nm or more are present in a number density of 1.0x 10<sup>6</sup> or more per square millimeter. The steel plate meets a condition specified by the relational expression: |da-df|/da # 0.35.

IPC 8 full level  
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Citation (search report)  
• [XD] JP 2010168644 A 20100805 - KOBE STEEL LTD  
• [L] JP 2013127108 A 20130627 - KOBE STEEL LTD  
• [A] JP 2011021263 A 20110203 - KOBE STEEL LTD  
• [A] JP 2012092425 A 20120517 - KOBE STEEL LTD  
• [A] JP 2012092422 A 20120517 - KOBE STEEL LTD  
• See references of WO 2014045829A1

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