

Title (en)
STEEL MATERIAL HAVING SUPERIOR TOUGHNESS OF WELDED HEAT-AFFECTED ZONE, AND METHOD FOR MANUFACTURING SAME

Title (de)
STAHLMATERIAL MIT HERVORRAGENDER ZÄHIGKEIT EINER GESCHWEISSTEN WÄRMEBEEINFLUSSTEN ZONE UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
MATÉRIAU D'ACIER À TÉNACITÉ SUPÉRIEURE DE ZONE SOUDÉE, TOUCHÉE PAR LA CHALEUR, ET SON PROCÉDÉ DE FABRICATION

Publication
EP 2666880 A4 20150225 (EN)

Application
EP 12736520 A 20120117

Priority
• JP 2011008258 A 20110118
• JP 2011206542 A 20110921
• JP 2012050852 W 20120117

Abstract (en)
[origin: EP2666880A1] This steel material satisfies the following conditions: (a) the ZrO₂ content is 5-50%, the REM oxide content is 5-50%, and the CaO content is 50% or less (excluding 0%) when composition of all oxide-based inclusions is measured and then expressed in terms of the mass of the individual oxides; (b) among all the inclusions, those having a circle equivalent diameter of 0.1-2 μm are present in an amount of 120/mm² or greater, oxides larger than 3 μm are present in an amount of 5.0/mm² or less, and oxides larger than 5 μm are present in an amount of 5.0/mm² or less; and when the composition of all the inclusions is measured, (c-1) the number of REM- and Zr-containing inclusions I that satisfy the REM/Zr molar ratio of 0.6-1.4 is 30% or greater in relation to the entire number of inclusions, and/or (c-2) the number of REM-, Zr-, Al-, Ca-, and Ti-containing inclusions II is 40% or greater in relation to the entire number of inclusions, inclusions II satisfying the condition in which the ratio of the total number of moles of REM and Zr and the total number of moles of Al, Ca, and Ti is 0.5-1.2. The HAZ toughness is thereby kept at a very high level even when the material is welded with a high heat input of 50 kJ/mm or greater.

IPC 8 full level
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CPC (source: EP KR)
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Citation (search report)
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