

Title (en)

STEEL MATERIAL HAVING SUPERIOR TOUGHNESS AT WELDING HEAT AFFECTED ZONE

Title (de)

STAHLMATERIAL MIT HERVORRAGENDER ZÄHIGKEIT BEIM SCHWEISSEN EINER WÄRMEEINFLUSSZONE

Title (fr)

MATÉRIAU ACIER PRÉSENTANT UNE RÉSISTANCE SUPÉRIEURE DANS UNE ZONE AFFECTÉE PAR LA CHALEUR DE SOUDAGE

Publication

**EP 2977479 A4 20161130 (EN)**

Application

**EP 14767775 A 20140317**

Priority

- JP 2013060452 A 20130322
- JP 2014057205 W 20140317

Abstract (en)

[origin: EP2977479A1] In this steel material satisfying a predetermined chemical composition and having a remainder comprising iron and unavoidable impurities, a complex oxide is contained containing REM, Zr, Ti, Al, Ca, and S, the complex oxide has no greater than 5.0/mm<sup>2</sup> of oxides having a circular-equivalent diameter of greater than 3 μm, and with respect to complex oxides having a circular-equivalent diameter of 0.1-3 μm, there are at least 100/mm<sup>2</sup> of complex oxides satisfying formula (1), and furthermore the average composition of the complex oxides that are 0.1-3 μm satisfying formula (1) is such that there is no greater than 20% of Al<sub>2</sub>O<sub>3</sub>, 3-20% of TiO<sub>2</sub>, 5-50% of ZrO<sub>2</sub>, 5-50 of REM oxide, 5-50% of CaO, and 1-15% of S. (where d is the circular-equivalent diameter of each complex oxide, and is 0.1-3 μm).

IPC 8 full level

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CPC (source: EP)

**C21D 9/46** (2013.01); **C22C 38/00** (2013.01); **C22C 38/001** (2013.01); **C22C 38/002** (2013.01); **C22C 38/005** (2013.01); **C22C 38/02** (2013.01); **C22C 38/04** (2013.01); **C22C 38/06** (2013.01); **C22C 38/08** (2013.01); **C22C 38/12** (2013.01); **C22C 38/14** (2013.01); **C22C 38/16** (2013.01); **C22C 38/20** (2013.01); **C22C 38/22** (2013.01); **C22C 38/24** (2013.01); **C22C 38/26** (2013.01); **C22C 38/28** (2013.01); **C22C 38/32** (2013.01); **C22C 38/38** (2013.01); **C22C 38/42** (2013.01); **C22C 38/44** (2013.01); **C22C 38/46** (2013.01); **C22C 38/48** (2013.01); **C22C 38/50** (2013.01); **C22C 38/54** (2013.01); **C22C 38/58** (2013.01); **C21D 8/0226** (2013.01); **C21D 2211/004** (2013.01)

Citation (search report)

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Designated contracting state (EPC)

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