

Title (en)

Steel excellent in toughness of weld heat-affected zone

Title (de)

Stahl mit durch Schweißen beeinflusster Zone mit ausgezeichneter Zähigkeit

Title (fr)

Acier présentant une excellente ténacité de la zone affectée thermiquement par soudage

Publication

**EP 1520912 A3 20050427 (EN)**

Application

**EP 04026201 A 20001113**

Priority

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- JP 2000033241 A 20000210
- JP 2000033242 A 20000210
- JP 2000068210 A 20000313

Abstract (en)

[origin: EP1262571A1] The present invention realizes excellent HAZ toughness by further suppressing the coarsening of austenite grains when they are heated for a long time at a high temperature in order to remarkably improve HAZ properties. The present invention is a steel excellent in the toughness of a weld heat-affected zone: having a specific chemical composition; satisfying the expression  $0 \leq EN \leq 0.002$  regarding the EN value expressed by an equivalent equation comprising (%N), (%Ti) and (%B); and containing oxide particles 0.005 to 2.0  $\mu\text{m}$ , preferably 0.1 to 2.0  $\mu\text{m}$ , in circle-equivalent diameter, which oxide particles contain at least Ca, Al and O in their composition and, in the mass percentage of the elements excluding O, contain Ca at 5% or more and Al at 5% or more with the balance consisting of other deoxidizing elements and/or unavoidable impurities, with the density of the oxide particles being 100 to 3,000 pieces/ $\text{mm}^2$ . <IMAGE>

IPC 1-7

**C22C 38/00**; **C22C 38/04**

IPC 8 full level

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CPC (source: EP KR)

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Citation (search report)

- [X] PATENT ABSTRACTS OF JAPAN vol. 1998, no. 12 31 October 1998 (1998-10-31)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1999, no. 13 30 November 1999 (1999-11-30)
- [A] PATENT ABSTRACTS OF JAPAN vol. 2000, no. 04 31 August 2000 (2000-08-31)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1996, no. 10 31 October 1996 (1996-10-31)

Cited by

CN103649355A; WO2013007729A1

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**EP 1262571 A1 20021204**; **EP 1262571 A4 20030326**; **EP 1262571 B1 20050810**; DE 60021919 D1 20050915; DE 60021919 T2 20060608; DE 60033070 D1 20070308; DE 60033070 T2 20070531; EP 1520912 A2 20050406; EP 1520912 A3 20050427; EP 1520912 B1 20070117; KR 100514667 B1 20050914; KR 20020073579 A 20020927; WO 0159167 A1 20010816

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