

Title (en)

PROCESS FOR MANUFACTURING MARAGING STEEL AND METHOD FOR REFINING INCLUSIONS

Title (de)

VERFAHREN ZUR HERSTELLUNG VON MARTENSITAUSHÄRTENDEM STAHL UND VERFAHREN ZUR VERFEINERUNG VON EINSCHLÜSSEN

Title (fr)

PROCÉDÉ DE FABRICATION D'ACIER MARAGING ET PROCÉDÉ DE RAFFINAGE D'INCLUSIONS

Publication

EP 2980233 A4 20170329 (EN)

Application

EP 14773993 A 20140320

Priority

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Abstract (en)

[origin: EP2980233A1] Provided is a method of producing maraging steel and a method of making Ti-based inclusions finer and making the sizes of Ti-based inclusions that may differ at different locations in the steel ingot more uniform. A method of producing a maraging steel by using vacuum arc remelting that uses a vacuum arc remelting apparatus at least includes a steel ingot production step of producing a steel ingot by melting a consumable electrode made of maraging steel in a crucible of the apparatus, and in this method, the steel ingot production step includes cooling the steel ingot with rare gas introduced between the steel ingot and the crucible.

IPC 8 full level

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Citation (search report)

- [Y] JP 4692282 B2 20110601
- [Y] DE 10208903 A1 20030918 - ALD VACUUM TECHN AG [DE]
- [Y] US 2005173092 A1 20050811 - KENNEDY RICHARD L [US], et al
- [Y] JP H0929420 A 19970204 - KOBE STEEL LTD
- [Y] US 3353585 A 19671121 - WENTZELL JOSEPH M
- [Y] US 3344840 A 19671003 - BUEHL RUSSELL C, et al
- [A] JP 2004238711 A 20040826 - HITACHI METALS LTD
- See references of WO 2014156942A1

Cited by

CN112501488A; WO2019121921A1

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