

Title (en)
MARTENSITIC STAINLESS STEEL MATERIAL

Title (de)
MARTENSITISCHES EDELSTAHL MATERIAL

Title (fr)
MATÉRIAU EN ACIER INOXYDABLE MARTENSITIQUE

Publication
EP 3604591 A4 20200902 (EN)

Application
EP 18774332 A 20180327

Priority
• JP 2017062539 A 20170328
• JP 2018012601 W 20180327

Abstract (en)
[origin: EP3604591A1] A martensitic stainless steel product has a chemical composition that contains, in mass%, C: 0.030% or less, Si: 1.00% or less, Mn: 1.00% or less, P: 0.030% or less, S: 0.005% or less, Al: 0.0010 to 0.0100%, N: 0.0500% or less, Ni: 5.00 to 6.50%, Cr: 10.00 to 13.40%, Cu: 1.80 to 3.50%, Mo: 1.00 to 4.00%, V: 0.01 to 1.00%, Ti: 0.050 to 0.300%, and Co: 0.300% or less and W: 0 to 1.50%, with the balance being Fe and impurities, and that satisfies Formula (1) and Formula (2), and the yield strength of 724 to 860 MPa, and the microstructure containing martensite having a volume ratio of 80% or more. The size of each intermetallic compound and each Cr oxide in the microstructure is not more than $5.0\text{ }\mu\text{m}$, and the gross area fraction of intermetallic compounds and Cr oxides is 3.0% or less. $11.5 \leq \text{Cr} + 2\text{Mo} + 2\text{Cu} - 1.5\text{Ni} \leq 14.3$, $\text{Ti}/\text{C} \geq 7.5$

IPC 8 full level
B21B 23/00 (2006.01); **C21D 1/18** (2006.01); **C21D 1/22** (2006.01); **C21D 6/00** (2006.01); **C21D 8/00** (2006.01); **C21D 8/02** (2006.01); **C21D 8/10** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01); **C22C 38/50** (2006.01); **C22C 38/52** (2006.01)

CPC (source: EP RU)
B21B 23/00 (2013.01 - EP); **C21D 1/18** (2013.01 - EP); **C21D 1/22** (2013.01 - EP); **C21D 6/00** (2013.01 - EP); **C21D 6/004** (2013.01 - EP); **C21D 8/00** (2013.01 - RU); **C21D 8/0205** (2013.01 - EP); **C21D 8/0226** (2013.01 - EP); **C21D 8/105** (2013.01 - EP); **C22C 38/00** (2013.01 - EP); **C22C 38/001** (2013.01 - EP); **C22C 38/02** (2013.01 - EP); **C22C 38/04** (2013.01 - EP); **C22C 38/06** (2013.01 - EP); **C22C 38/42** (2013.01 - EP); **C22C 38/44** (2013.01 - EP); **C22C 38/46** (2013.01 - EP); **C22C 38/50** (2013.01 - EP RU); **C22C 38/52** (2013.01 - EP)

Citation (search report)
• [I] US 5820699 A 19981013 - ASAHI HITOSHI [JP], et al
• [A] EP 1584699 A1 20051012 - SUMITOMO METAL IND [JP]
• [A] JP H09291344 A 19971111 - NIPPON STEEL CORP
• [A] JP 2011089159 A 20110506 - JFE STEEL CORP
• [A] EP 1652950 A1 20060503 - SUMITOMO METAL IND [JP]
• [A] JP 2015161010 A 20150907 - JFE STEEL CORP
• See references of WO 2018181404A1

Cited by
EP4130317A4; US11401570B2; US11827949B2; EP3533892B1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)
EP 3604591 A1 20200205; **EP 3604591 A4 20200902**; BR 112019017764 A2 20200331; CN 110462085 A 20191115; JP 6787483 B2 20201118; JP WO2018181404 A1 20191212; MX 2019011443 A 20191101; RU 2718019 C1 20200330; WO 2018181404 A1 20181004

DOCDB simple family (application)
EP 18774332 A 20180327; BR 112019017764 A 20180327; CN 201880020755 A 20180327; JP 2018012601 W 20180327; JP 2019509937 A 20180327; MX 2019011443 A 20180327; RU 2019132204 A 20180327