

Title (en)

A THIN CAST STRIP PRODUCT WITH MICROALLOY ADDITIONS, AND METHOD FOR MAKING THE SAME

Title (de)

DÜNNES, GEGOSSENES STAHLBANDPRODUKT MIT MIKROLEGIERUNGSZUSÄTZEN UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)

PRODUIT EN BANDE, MOULÉ, MINCE CONTENANT DES AJOUTS DE MICROALLIAGE, ET SON PROCÉDÉ DE FABRICATION

Publication

EP 2152451 A4 20140820 (EN)

Application

EP 08747712 A 20080506

Priority

- US 2008062776 W 20080506
- US 74488107 A 20070506
- US 94378107 P 20070613

Abstract (en)

[origin: WO2008137898A1] A steel product or thin steel cast strip comprised of, by weight, less than 0.25% carbon, between 0.20 and 2.0% manganese, between 0.05 and 0.50% silicon, less than 0.01% aluminum, and at least one of niobium between 0.01% and 0.20% and vanadium between 0.01% and 0.20%, and having a microstructure of a majority bainite and acicular ferrite, and more than 70% niobium and/or vanadium in solid solution. The steel product may have an increase in elongation and an increase in yield strength after age hardening. The age hardened steel product may have niobium carbonitride particles with an average particle size of 10 nanometers and less, and may have substantially no niobium carbonitride particles greater than 50 nanometers. The steel product may have a yield strength of at least 380 MPa or a tensile strength of at least 410 MPa, or both. The steel product or thin cast steel strip may have a total elongation of at least 6% or 10%.

IPC 8 full level

B22D 11/06 (2006.01); **B22D 11/124** (2006.01); **C21D 6/00** (2006.01); **C21D 6/02** (2006.01); **C21D 8/02** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/12** (2006.01)

CPC (source: EP KR)

B22D 11/06 (2013.01 - KR); **B22D 11/0622** (2013.01 - EP); **B22D 11/124** (2013.01 - EP); **C21D 6/005** (2013.01 - EP); **C21D 6/008** (2013.01 - EP); **C21D 6/02** (2013.01 - EP); **C21D 8/02** (2013.01 - KR); **C21D 8/0226** (2013.01 - EP); **C22C 38/02** (2013.01 - EP); **C22C 38/04** (2013.01 - EP); **C22C 38/12** (2013.01 - EP); **C21D 2211/005** (2013.01 - EP)

Citation (search report)

- [X] WO 9857767 A1 19981223 - ACCIAI SPECIALI TERNI SPA [IT], et al
- [X] WO 2006103991 A1 20061005 - KOBE STEEL LTD [JP], et al
- [X] JP H08199298 A 19960806 - KOBE STEEL LTD
- [X] JP H04325657 A 19921116 - KOBE STEEL LTD
- [X] JP H05171293 A 19930709 - KOBE STEEL LTD
- [X] JP H1030149 A 19980203 - KOBE STEEL LTD
- [A] WO 0226422 A1 20020404 - ISHIKAWAJIMA HARMA HEAVY IND C [JP], et al
- [A] US 2006144553 A1 20060706 - BLEJDE WALTER N [US], et al
- [A] WO 03024644 A1 20030327 - NUCOR CORP [US], et al
- [A] US 6488790 B1 20021203 - HARTMANN JOHN E [US], et al
- [A] EP 0646656 A1 19950405 - NIPPON STEEL CORP [JP]
- See references of WO 2008137898A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)

WO 2008137898 A1 20081113; AU 2008247365 A1 20081113; AU 2008247365 B2 20130516; AU 2008247366 A1 20081113; AU 2008247366 B2 20130502; AU 2008247367 A1 20081113; AU 2008247367 B2 20130516; BR PI0811554 A2 20141209; BR PI0811554 B1 20170404; CA 2686495 A1 20081113; CA 2686495 C 20160621; CN 101765469 A 20100630; CN 101765469 B 20150722; CN 101765470 A 20100630; CN 101795792 A 20100804; CO 6241142 A2 20110120; CR 11111 A 20100526; EC SP099784 A 20100226; EP 2152451 A1 20100217; EP 2152451 A4 20140820; EP 2152451 B1 20200226; EP 2162251 A1 20100317; EP 2162251 A4 20140827; EP 2162251 B1 20210728; EP 2162252 A1 20100317; EP 2162252 A4 20140903; EP 2162252 B1 20210707; ES 2884217 T3 20211210; ES 2894332 T3 20220214; JP 2010527789 A 20100819; JP 5385899 B2 20140108; KR 101527735 B1 20150610; KR 101576963 B1 20151221; KR 20100017707 A 20100216; KR 20100023852 A 20100304; MA 31401 B1 20100503; MX 2009012021 A 20091214; MY 149968 A 20131115; MY 150225 A 20131231; MY 157870 A 20160729; NZ 581394 A 20120525; NZ 581423 A 20120525; NZ 581424 A 20120525; PL 2152451 T3 20200907; PL 2162251 T3 20211227; PL 2162252 T3 20211206; RU 2009145115 A 20110620; RU 2471589 C2 20130110; WO 2008137899 A1 20081113; WO 2008137900 A1 20081113

DOCDB simple family (application)

US 2008062776 W 20080506; AU 2008247365 A 20080506; AU 2008247366 A 20080506; AU 2008247367 A 20080506; BR PI0811554 A 20080506; CA 2686495 A 20080506; CN 200880023157 A 20080506; CN 200880023167 A 20080506; CN 200880023586 A 20080506; CO 09131765 A 20091119; CR 11111 A 20091116; EC SP099784 A 20091204; EP 08747712 A 20080506; EP 08747717 A 20080506; EP 08747719 A 20080506; ES 08747717 T 20080506; ES 08747719 T 20080506; JP 2010507600 A 20080506; KR 20097025584 A 20080506; KR 20097025585 A 20080506; MA 32386 A 20091130; MX 2009012021 A 20080506; MY PI20094704 A 20080506; MY PI20094705 A 20080506; MY PI20094706 A 20080506; NZ 58139408 A 20080506; NZ 58142308 A 20080506; NZ 58142408 A 20080506; PL 08747712 T 20080506; PL 08747717 T 20080506; PL 08747719 T 20080506; RU 2009145115 A 20080506; US 2008062781 W 20080506; US 2008062783 W 20080506