Search history

Search 1: TAC=(The steel sheet and high strength and Young's modulus) (Results 17)

1) Family number: 28463659 (JP2003089851A)

© PatBase

Title: **HIGH** **STRENGTH** DUPLEX STAINLESS STEEL SHEET HAVING HIGH ELASTICITY, AND PRODUCTION METHOD THEREFOR

Abstract: Source: JP2003089851A PROBLEM TO BE SOLVED: To provide a stainless steel sheet which has a high Young's **modulus** of 200,000 N/mm<2> in the T direction and the L direction therein. SOLUTION: **The** **steel** **sheet** has a composition containing, by mass, 0.04 to 0.15 percent C, less than or equal to 2.0 percent Si, less than or equal to 2.0 percent Mn, 10.0 to 20.0 percent Cr, 0.5 to 4.0 percent Ni, 0 to 2.0 percent Cu, less than or equal to 0.10 percent N, 0 to 2.0 percent Mo, 0 to 0.05 percent Al, 0 to 0.50 percent Nb, 0 to 0.30 percent V, 0 to 0.50 percent Ti, 0 to 0.015 percent B, 0 to 0.2 percent Y, 0 to 0.2 percent rare earth metals and 0 to 0.1 percent Ca (0 percent denotes the case of no addition), and the balance Fe with inevitable impurities, and has a fine duplex structure in which the old austenite mean grain diameter is less than or equal to 7 micro m in a duplex structure of ferrite +40 to 95 vol. percent martensite. This steel sheet is produced by heating a worked steel sheet obtained at a cold rolling rate of greater than or equal to20 percent, and having a ferrite single phase structure, e.g. to the temperature range of 950 to 1,100 deg.C, and cooling **the** **steel** **sheet**.

Classifications:
International (IPC 8-9): C21D9/46 C22C38/00 C22C38/40 C22C38/58 (Advanced/Invention);
C21D9/46 C22C38/00 C22C38/40 C22C38/58 (Core/Invention)
International (IPC 1-7): C21D9/46 C22C38/00 C22C38/40 C22C38/58



Family:

Publication number	Publication date	Application number	Application date
JP2003089851 A2	20030328	JP20010280653	20010914

Priority:
JP20010280653 20010914

Probable Assignee: NISSHIN STEEL CO LTD
Assignee(s): (std): NISSHIN STEEL CO LTD
Assignee(s): NISSHINSEIKOUKABUSHIKIGAISHA
Inventor(s): (std): FUJIMOTO HIROSHI ; HIRAMATSU NAOTO ; KUMANO NAOHITO ; TOMIMURA HIROKI

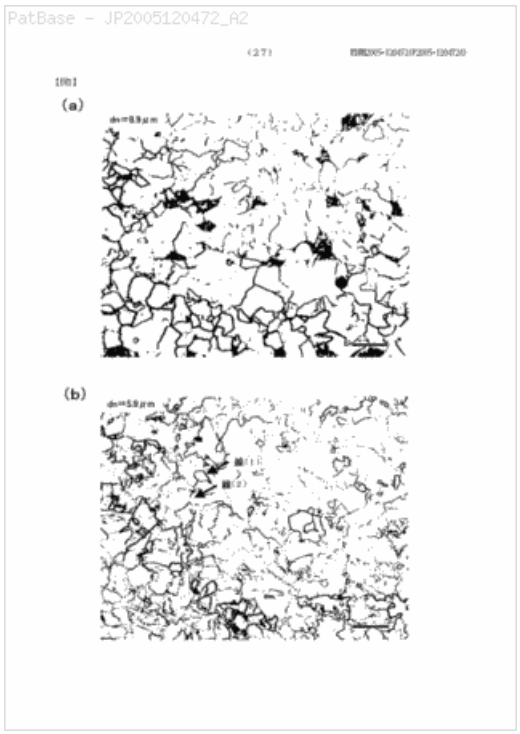
2) Family number: 32010417 (JP2005120472A)

© PatBase

Title: **HIGH**-**STRENGTH** STEEL SHEET AND ITS PRODUCTION METHOD

Abstract: Source: JP2005120472A PROBLEM TO BE SOLVED: To provide a **high**-**strength** steel sheet which is useful as a steel sheet for automobiles etc. and has a high tensile strength (TS) of greater than or equal to 440 MPa, a high rigidity and a high r-value (r-value greater than or equal to 1.3), and its production method. SOLUTION: The **high**-**strength** steel sheet has a constitution comprising, by mass, 0.010-0.050 percent C, 0.01-1.0 percent Si, 1.0-3.0 percent Mn, 0.005-0.1 percent P, less than or equal to 0.01 percent S, 0.005-0.1 percent Al, less than or equal to 0.01 percent N and 0.03-0.3 percent Nb and the balance substantially being Fe and unavoidable impurities, provided that Nb and C contents satisfy the relation: (Nb/93)/(C/12)=0.2-0.7 and that Mn, Si and Nb contents satisfy a prescribed relation, and a steel structure containing greater than or equal to 50 percent ferrite phase and greater than or equal to 1 percent martensitic phase in terms of area ratio. **The** **steel** **sheet** has a Young's **modulus** perpendicular to rolling direction of greater than or equal to 225 GPa and an average r-value of greater than or equal to 1.3.

Classifications:
International (IPC 8-9): C21D9/48 C22C38/00 C22C38/12 C22C38/58 (Advanced/Invention);
C21D9/48 C22C38/00 C22C38/12 C22C38/58 (Core/Invention)
International (IPC 1-7): C21D9/48 C22C38/00 C22C38/12 C22C38/58



Family:

Publication number	Publication date	Application number	Application date
JP2005120472 A2	20050512	JP20040278056	20040924
JP4407449 B2	20100203	JP20040278056	20040924

Priority:
JP20030335945 20030926 JP20040278056 20040924

Probable Assignee: JFE STEEL KK
Assignee(s): (std): JFE STEEL KK
Assignee(s): JFE STEEL CORP
Inventor(s): (std): HOSOYA YOSHIHIRO ; OKUDA KANEHARU ; URABE TOSHIAKI ; YOSHIDA HIROMI

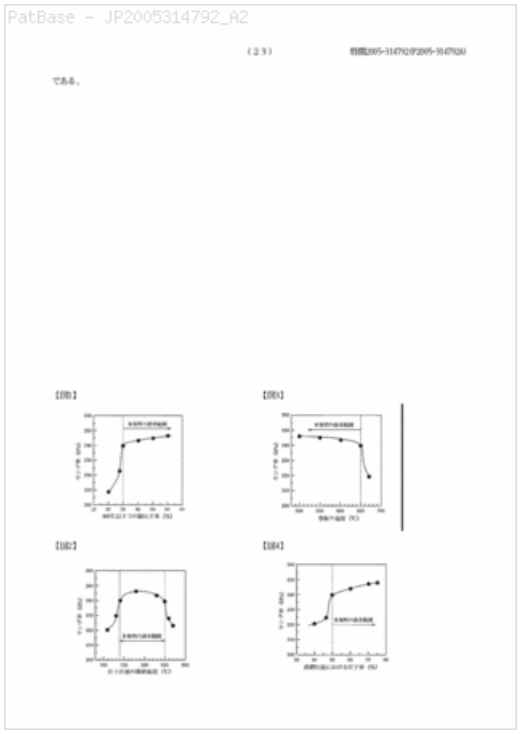
3) Family number: 32499081 (JP2005314792A)

© PatBase

Title: HIGH-RIGIDITY **HIGH**-**STRENGTH** THIN STEEL SHEET AND METHOD FOR PRODUCING SAME

Abstract: Source: JP2005314792A PROBLEM TO BE SOLVED: To provide a high-rigidity **high**-**strength** thin steel sheet combining a **high** **strength** of greater than or equal to 590 MPa tensile strength and a high rigidity of greater than or equal to 240 GPa Young's **modulus** and a method for producing the same. SOLUTION: The high-rigidity **high**-**strength** thin steel sheet has a composition which consists of, by mass, 0.02 to 0.10 percent C, less than or equal to 1.5 percent Si, 1.5 to 3.5 percent Mn, less than or equal to 0.05 percent P, less than or equal to 0.01 percent S, less than or equal to 1.5 percent Al, less than or equal to 0.01 percent N, 0.05 to 0.40 percent Nb and the balance substantially iron with inevitable impurities and in which the C, N and Nb contents satisfy 0.01 less than or equal to C+(12/14)xN-(12/92.9)xNb less than or equal to 0.05 and N less than or equal to C+(14/92.9)x(Nb-0.02). **The** **steel** **sheet** has a structure containing a ferrite phase as a main phase and also containing, by area ratio, greater than or equal to 1 percent, in total, of a martensite phase and a bainite phase and further has greater than or equal to 590 MPa tensile strength and greater than or equal to 240 GPa Young's **modulus**.

Classifications:
International (IPC 8-9): C21D9/46 C22C38/00 C22C38/12 C22C38/58 (Advanced/Invention);
C21D9/46 C22C38/00 C22C38/12 C22C38/58 (Core/Invention)
International (IPC 1-7): C21D9/46 C22C38/00 C22C38/12 C22C38/58



Family:

Publication number	Publication date	Application number	Application date
JP2005314792 A2	20051110	JP20040347067	20041130
JP4506438 B2	20100721	JP20040347067	20041130

Priority:

JP20040107461 20040331 JP20040347067 20041130

Probable Assignee: JFE STEEL KK

Assignee(s): (std)**:** JFE STEEL KK

Assignee(s): JFE STEEL CORP

Inventor(s): (std)**:** HOSOYA YOSHIHIRO ; KIZU TARO ; OKUDA KANEHARU ; URABE TOSHIAKI ; YOSHIDA HIROMI

4) Family number: 32499082 (JP2005314793A)

© PatBase

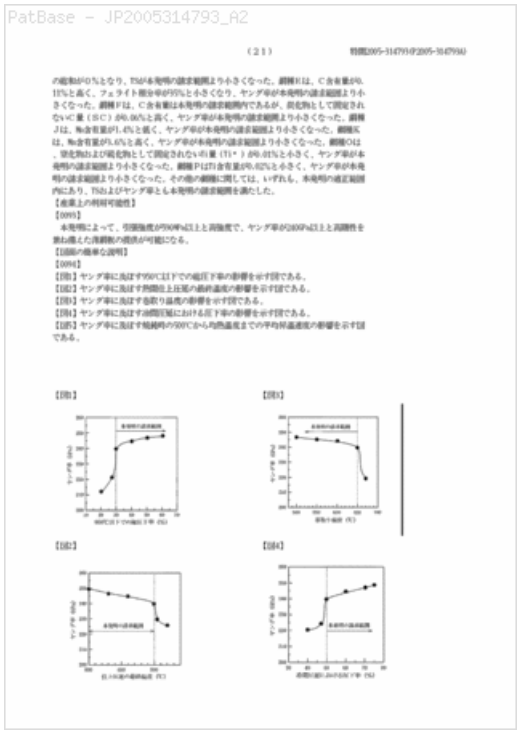
Title: HIGH-RIGIDITY **HIGH**-**STRENGTH** THIN STEEL SHEET AND METHOD FOR PRODUCING SAME

Abstract: Source: JP2005314793A PROBLEM TO BE SOLVED: To provide a high-rigidity **high**-**strength** thin steel sheet combining a **high** **strength** of greater than or equal to 590 MPa tensile strength and a high rigidity of greater than or equal to 240 GPa Young's **modulus** and a method for producing the same. SOLUTION: The high-rigidity **high**-**strength** thin steel sheet has a composition which consists of, by mass, 0.02 to 0.10 percent C, less than or equal to 1.5 percent Si, 1.5 to 3.5 percent Mn, less than or equal to 0.05 percent P, less than or equal to 0.01 percent S, less than or equal to 1.5 percent Al, less than or equal to 0.01 percent N, 0.03 to 0.20 percent Ti and the balance substantially iron with inevitable impurities and in which the C, N, S and Ti contents satisfy inequalities Ti^{SS} =Ti-(47.9/14)xN-(47.9/32.1)xS greater than or equal to 0.02 and 0.01 less than or equal to C-(12/47.9)xTi^{SS} less than or equal to 0.05. **The** **steel** **sheet** has a structure containing a ferrite phase as a main phase and also containing, by area ratio, greater than or equal to 1 percent, in total, of a martensite phase and a bainite phase and further has greater than or equal to 590 MPa tensile strength and greater than or equal to 240 GPa Young's **modulus**.

Classifications:

International (IPC 8-9): C21D9/46 C22C38/00 C22C38/14 C22C38/58 (Advanced/Invention);
C21D9/46 C22C38/00 C22C38/14 C22C38/58 (Core/Invention)

International (IPC 1-7): C21D9/46 C22C38/00 C22C38/14 C22C38/58



Family:

Publication number	Publication date	Application number	Application date
JP2005314793 A2	20051110	JP20040347152	20041130
JP4506439 B2	20100721	JP20040347152	20041130

Priority:

JP20040107455 20040331 JP20040347152 20041130

Probable Assignee: JFE STEEL KK

Assignee(s): (std): JFE STEEL KK

Assignee(s): JFE STEEL CORP

Inventor(s): (std): HOSOYA YOSHIHIRO ; KIZU TARO ; OKUDA KANEHARU ; URABE TOSHIAKI ; YOSHIDA HIROMI

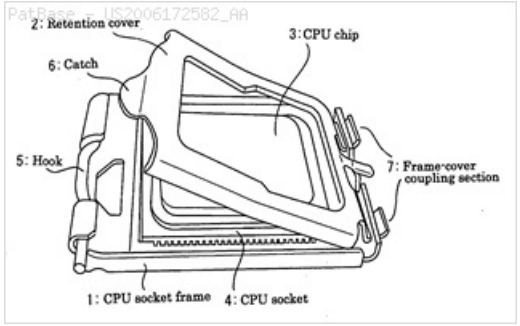
5) Family number: 33177701 (US2006172582A)

© PatBase

Title: HIGH-RIGIDITY STAINLESS STEEL FOR CENTRAL PROCESSING UNIT SOCKET FRAME OR CENTRAL PROCESSING UNIT RETENTION COVER

Abstract: Source: US2006172582A High-rigidity stainless steel sheet is provided for CPU socket frames or retention covers that are lower in cost and have a better fastening performance compared to conventional ones. The stainless steel sheet has a Young's **modulus** E_T in the T direction that is 210 GPa or above, an 0.2 percent yield strength $sigma_{0.2L}$ in the L direction that is from 500 to 900 MPa, and an 0.2 percent yield strength $sigma_{0.2T}$ in the T direction that is from 600 to 900 MPa, with the L direction being steel sheet rolling direction and the T direction being a direction perpendicular to the rolling direction (that is, a direction perpendicular to both the rolling direction and the sheet thickness direction). In the stainless steel sheet, the relationship between the Young's **modulus** E_L (GPa) in the L direction and the Young's **modulus** E_T (GPa) in the T direction is preferably E_L less than or equal to E_T -15.

Classifications:
International (IPC 8-9): B21B1/00 C22C38/00 C22C38/18 C22C38/50 H01R13/62 H01R4/48 H01R4/50 H01R43/00 (Advanced/Invention); C22C38/00 C22C38/18 (Advanced/Non-invention); B21B1/00 C22C38/00 C22C38/18 C22C38/50 H01R13/62 H01R4/48 H01R4/50 H01R43/00 (Core/Invention)
International (IPC 1-7): H01R4/48
CPC: H05K7/1061 C21D2211/005 C22C38/04 C22C38/34 C22C38/42 C22C38/44 C22C38/48 C22C38/50
European: H05K7/10F2
US: 439/329 439/342 439/366



Family:

Publication number	Publication date	Application number	Application date
CN100539328 C	20090909	CN200610074731	20060111
CN101000993 A	20070718	CN200610074731	20060111
JP2006241592 A2	20060914	JP20060021705	20060131

JP4507114 B2	20100721	JP20060021705	20060131
KR20060089136 A	20060808	KR20060002098	20060109
MY147930 A	20130215	MY20060000318	20060124
TH78791 A	20060720	TH20061000217	20060120
TW200635155 A	20061001	TW20060103424	20060127
TWI287337 B	20070921	TW20060103424	20060127
US2006172582 AA	20060803	US20060342578	20060131
US2009191748 AA	20090730	US20090382948	20090327

Priority:

JP20050027269 20050203 JP20060021705 20060131 US20060342578 20060131 US20090382948 20090327

Probable Assignee: NISSHIN STEEL CO LTD

Assignee(s): (std): BABAZONO KATSUNORI ; FUJII TAKAHIRO ; KATSUKI JUNICHI ; NISSHIN STEEL CO LTD

Assignee(s): NISSHINSEIKOUKABUSHIKIGAISHA ; NISSHIN STEEL CO

Inventor(s): (std): BABAZONO KATSUNORI ; FUJII TAKAHIRO ; KATSUKI JUNICHI ; TAKAHIRO FUJII ; KATSUNORI BABAZONO ; JUNICHI KATSUKI ; JUNICHI FUJII TAKAHIRO BABAZON

Inventor(s): FUJII TAKAHIRO BABAZONO KATSUNORI KATSUKI JUNICHI

Agent(s): CLARK AND BRODY

6) Family number: 34476865 (JP2007092129A)

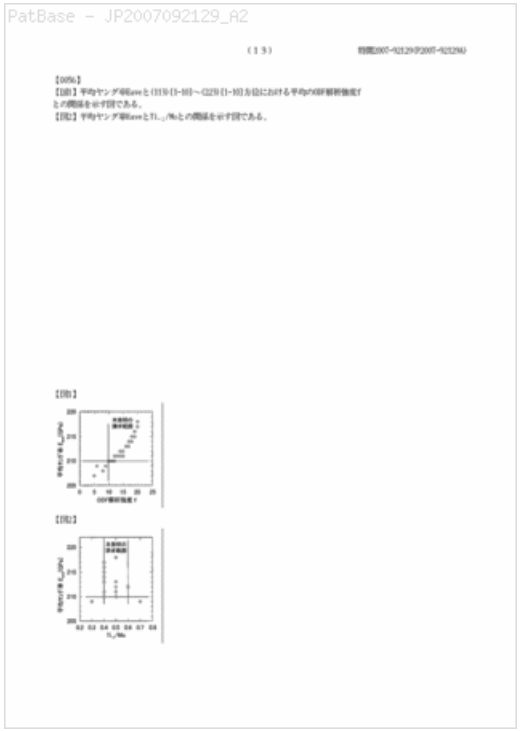
© PatBase

Title: **HIGH**-**STRENGTH** STEEL SHEET HAVING EXCELLENT RIGIDITY AND ITS PRODUCTION METHOD

Abstract: Source: JP2007092129A PROBLEM TO BE SOLVED: To provide a **high**-**strength** steel sheet having excellent rigidity in which tensile strength is greater than or equal to 590 MPa, a Young's **modulus** in the 90 degrees direction to the rolling direction is greater than or equal to 230 GPa, and the average Young's **modulus** in the 0 degrees, 45 degrees and 90 degrees directions to the rolling direction is greater than or equal to 210 GPa, and to provide its production method. SOLUTION: The **high**-**strength** steel sheet having excellent rigidity has a composition comprising, by mass, 0.02 to 0.15 percent C, less than or equal to 0.3 percent Si, 1.0 to 2.5 percent Mn, less than or equal to 0.05 percent P, less than or equal to 0.01 percent S, less than or equal to 1.0 percent Al, less than or equal to 0.01 percent N, 0.01 to 0.2 percent Ti and 0.1 to 0.4 percent Mo, and in which the contents of C, N, S, Ti and Mo satisfy equations (1) and (2), and the balance Fe with inevitable impurities, and has a microstructure comprising a ferrite phase of greater than or equal to 90 percent by area ratio, and in which the average ODF (Orientation Distribution Function) analysis strength (f) in the (113)[1-10] to (223)[1-10] orientation of the sheet face in the 1/4 sheet thickness of **the** **steel** **sheet** is greater than or equal to 10, where the equations (1) to (2) are: $Ti_{-1}/Mo=0.4$ to $0.6...(1)$, and $C-(12/47.9)xTi_{-1}-(12/95.9)xMo<0.010...(2)$, wherein, $Ti_{-1}=Ti-(47.9/14)xN-(47.9/32.1)xS$, and each atomic symbol in the equations denotes the content of each element.

Classifications:

International (IPC 8-9): C21D9/46 C22C38/00 C22C38/14 C22C38/58 (Advanced/Invention);
C21D9/46 C22C38/00 C22C38/14 C22C38/58 (Core/Invention)



Family:

Publication number	Publication date	Application number	Application date
JP2007092129 A2	20070412	JP20050283414	20050929
JP4622784 B2	20110202	JP20050283414	20050929

Priority:

JP20050283414 20050929

Probable Assignee: JFE STEEL KK

Assignee(s): (std): JFE STEEL KK

Assignee(s): JFE STEEL CORP ; JFE STEEL INC CO

Inventor(s): (std): HOSOYA YOSHIHIRO ; KIZU TARO ; SAITO ISATO ; URABE TOSHIAKI

7) Family number: 34476864 (JP2007092128A)

© PatBase

Title: **HIGH**-**STRENGTH** STEEL SHEET HAVING EXCELLENT RIGIDITY AND ITS PRODUCTION METHOD

Abstract: Source: JP2007092128A PROBLEM TO BE SOLVED: To provide a **high**-**strength** steel sheet having excellent rigidity which has a tensile strength TS of greater than or equal to 780 MPa, and whose Young's **modulus** E in the orthogonal direction to the rolling direction is greater than or equal to 230 GPa, and to provide its production method. SOLUTION: The **high**-**strength** steel sheet having excellent rigidity has a composition comprising, by mass, 0.05 to 0.15 percent C, less than or equal to 0.3 percent Si, 1.5 to 2.5 percent Mn, less than or equal to 0.05 percent P, less than or equal to 0.01 percent S, less than or equal to 1.0 percent Al, less than or equal to 0.01 percent N, 0.02 to 0.1 percent Nb, 0.01 to 0.2 percent Ti and 0.1 to 1.0 percent Mo, and in which the contents of C, N, S, Nb, Ti and Mo satisfy equations (1) to (3), and the balance Fe with inevitable impurities, and in which the average ODF (Orientation Distribution Function) analysis strength (f) in the (113)[1-10] to (223)[1-10] orientation of the sheet face in the 1/4 sheet thickness of **the** **steel** **sheet** is greater than or equal to 6. The equations (1) to (3) are: Ti_{-1} greater than or equal to 0.01... (1), Ti_{-1}/Mo=0.1 to 0.5... (2), and C-(12/47.9)xTi_{-1} -(12/92.9)xNb-(12/95.9)xMo greater than or equal to 0.01... (3), wherein, Ti_{-1} =Ti-(47.9/14)xN-(47.9/32.1)xS, and each atomic symbol in the equations denotes the content (mass percent) of each element.

Classifications:

International (IPC 8-9): C21D9/46 C22C38/00 C22C38/14 C22C38/58 (Advanced/Invention);
C21D9/46 C22C38/00 C22C38/14 C22C38/58 (Core/Invention)



Family:

Publication number	Publication date	Application number	Application date
JP2007092128 A2	20070412	JP20050283413	20050929
JP4622783 B2	20110202	JP20050283413	20050929

Priority:

JP20050283413 20050929

Probable Assignee: JFE STEEL KK

Assignee(s): (std): JFE STEEL KK

Assignee(s): JFE STEEL CORP ; JFE STEEL INC CO

Inventor(s): (std): HOSOYA YOSHIHIRO ; KIZU TARO ; SAITO ISATO ; URABE TOSHIAKI

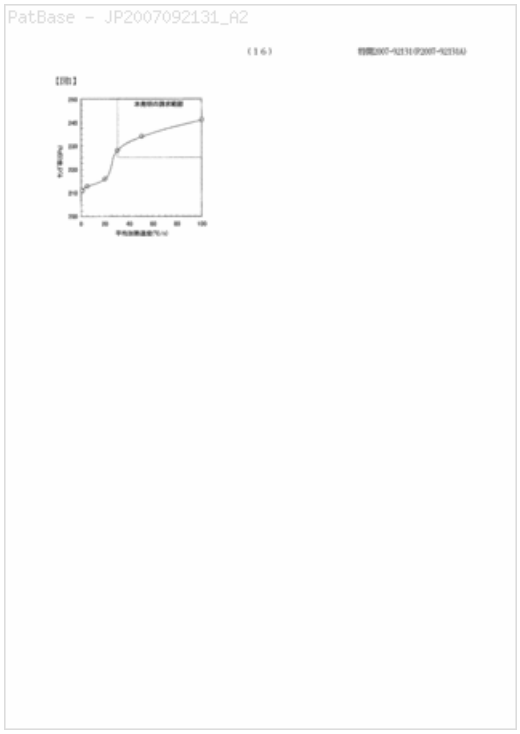
8) Family number: 34476867 (JP2007092131A)

© PatBase

Title: **HIGH** **STRENGTH** THIN STEEL SHEET HAVING EXCELLENT RIGIDITY, AND ITS PRODUCTION METHOD

Abstract: Source: JP2007092131A PROBLEM TO BE SOLVED: To provide a **high** **strength** thin steel sheet having excellent rigidity which has a tensile strength of greater than or equal to 590 MPa, a yield ratio of greater than or equal to 0.65 and a Young's **modulus** of greater than or equal to 225 GPa; and to provide a production method therefor. SOLUTION: The **high** **strength** thin steel sheet has a composition comprising, by mass, 0.05 to 0.20 percent C, less than or equal to 1.5 percent Si, 1.0 to 2.5 percent Mn, less than or equal to 0.05 percent P, less than or equal to 0.01 percent S, less than or equal to 1.5 percent Al and less than or equal to 0.01 percent N, and the balance Fe with inevitable impurities, and has a microstructure where the average particle diameter of a ferritic phase is less than or equal to 5 micro m, and further, the ferritic phase is present in greater than or equal to 50 percent by area, and in which the average ODF (Orientation Distribution Function) analysis strength f in the (113)[1-10] to (223)[1-10] orientation of the sheet face in the 1/4 sheet thickness of **the** **steel** **sheet** is greater than or equal to 4; wherein, [1-10] denotes the direction of (1, -1, 0).

Classifications:
International (IPC 8-9): B21B3/00 C21D9/46 C22C38/00 C22C38/06 C22C38/58 (Advanced/Invention);
B21B3/00 C21D9/46 C22C38/00 C22C38/06 C22C38/58 (Core/Invention)



Family:

Publication number	Publication date	Application number	Application date
JP2007092131 A2	20070412	JP20050283416	20050929
JP4867257 B2	20120201	JP20050283416	20050929

Priority:
JP20050283416 20050929

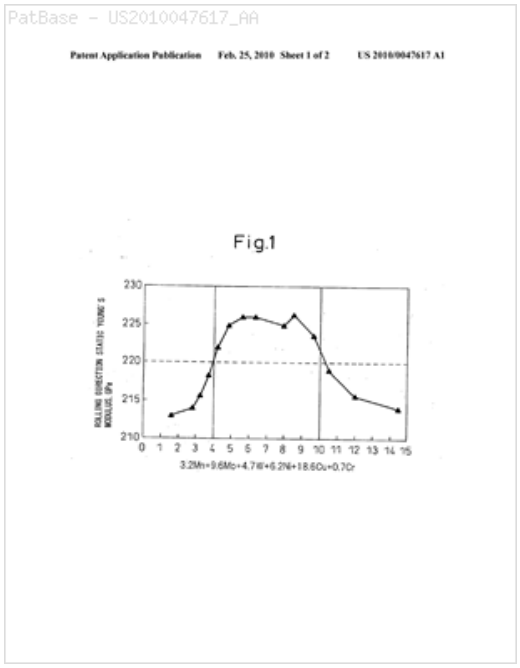
Probable Assignee: JFE STEEL KK
Assignee(s): (std): JFE STEEL KK
Assignee(s): JFE STEEL CORP ; JFE STEEL INC CO
Inventor(s): (std): HOSOYA YOSHIHIRO ; KIZU TARO ; SAITO ISATO ; URABE TOSHIAKI

9) Family number: 41802785 (US2010047617A)

© PatBase

Title: HIGH YOUNG'S **MODULUS** STEEL PLATE AND METHOD OF PRODUCTION OF SAME

Abstract: Source: US2010047617A Steel sheet having a composition of ingredients containing substantially, by mass percent, C: 0.005 to 0.200 percent, Si: 2.50 percent or less, Mn: 0.10 to 3.00 percent, N: 0.0100 percent or less, Nb: 0.005 to 0.100 percent, and Ti: 0.002 to 0.150 percent and satisfying the relationship of Ti-48/14xN?0.0005, having a sum of the X-ray random intensity ratios of the {100}<001> orientation and the {110}<001> orientation of a ? sheet thickness part of 5 or less, having a sum of the maximum value of the X-ray random intensity ratios of the {110}<111> to {110}<112> orientation group and the X-ray random intensity ratios of the {211}<111> orientation of 5 or more, and having a high rolling direction Young's **modulus** measured by the static tension method and a method of production of the same are provided.
Classifications:
International (IPC 8-9): B05D1/18 B21B1/26 B21B3/00 B32B15/01 C21D38/02 C21D6/00 C21D8/02 C21D8/04 C21D9/46 C22C38/00 C22C38/02 C22C38/04 C22C38/12 C22C38/14 C22C38/16 C22C38/18 C22C38/20 C22C38/22 C22C38/32 C22C38/42 C22C38/44 C22C38/48 C22C38/50 C22C38/54 C22C38/58 C23C2/06 C23C2/28 C23C2/38 C23C2/40 (Advanced/Invention);
B05D1/18 B21B1/26 B21B3/00 B32B15/01 C21D9/46 C22C38/00 C22C38/04 C22C38/12 C22C38/14 C22C38/16 C22C38/18 C22C38/20 C22C38/22 C22C38/32 C22C38/42 C22C38/58 C23C2/06 C23C2/28 C23C2/36 (Core/Invention)
International (IPC 1-7): C22C38/00
CPC: C23C2/40 C21D6/005 C21D6/008 C21D8/0226 C21D8/0426 C21D9/46 C21D2201/05 C22C38/02 C22C38/04 C22C38/12 C22C38/14 C23C2/06 Y10T428/12799 C22C38/001 C22C38/002 C22C38/004 C22C38/005 C22C38/06
European: C21D6/00H C21D6/00K C21D8/02D2 C21D8/04D2 C21D9/46 C22C38/02 C22C38/04 C22C38/12 C22C38/14 C23C2/06 C23C2/40 M21D201/05
US: 148/320 148/332 148/333 148/334 148/335 148/336 148/500 148/504 148/533 148/533S 148/602 420/104 420/104S 420/106 420/106S 420/114 420/114S 420/120 420/120S 420/127 420/127S 420/83 420/83S 420/84 420/84S 420/90 420/90S 420/91 420/91S 420/92 420/92S 427/433 427/433S 428/659 428/659P 72/202 72/202S 72/226 72/226S



Family:

Publication number	Publication date	Application number	Application date
BRPI0718542 A2	20140204	BR2007PI18542	20071107
BRPI0718542 B1	20160719	BR2007PI18542	20071107
CA2668987 AA	20090507	CA20072668987	20071107
CA2668987 C	20130409	CA20072668987	20071107
CN101535519 A	20090916	CN200780041422	20071107
CN101535519 B	20120718	CN200780041422	20071107
EP2088218 A1	20090812	EP20070831772	20071107
EP2088218 A4	20130403	EP20070831772	20071107
IN02776DN2009 A	20090619	IN2009DN02776	20090427
IN281302 B	20170317	IN2009DN02776	20090427
JP2008274395 A2	20081113	JP20070288960	20071106
JP5228447 B2	20130703	JP20070288960	20071106
KR101109869 B1	20120313	KR20097009295	20071107
KR20090086401 A	20090812	KR20097009295	20071107
US2010047617 AA	20100225	US20070312325	20071107
US8048238 BB	20111101	US20070312325	20071107
US8353992 BB	20130115	US20070312325	20071107
WO08056812 A1	20080515	WO2007JP72042	20071107

Priority:

JP20060301354 20061107 JP20070098764 20070404 JP20070288960 20071106
WO2007JP72042 20071107

Probable Assignee: NIPPON STEEL AND SUMITOMO METAL CORP

Assignee(s): (std): HANYA KOJI ; MARUYAMA NAOKI ; NAKAMURA YOHJI ; NIPPON STEEL AND SUMITOMO METAL ; NIPPON STEEL AND SUMITOMO METAL CORP ; NIPPON STEEL CORP ; TAKAHASHI MANABU ; SUGIURA NATSUKO

Inventor(s): (std): KOJI HANYA ; MANABU TAKAHASHI ; NAOKI MARUYAMA ; NATSUKO SUGIURA ; YOHJI NAKAMURA ; TAKAHASHI MANABU ; SUGIURA NATSUKO ; NAKAMURA YOHJI ; MARUYAMA NAOKI ; HANYA KOJI ; NAKAMURA YOJI

Agent(s): GOUDREAU GAGE DUBUC; VOSSIUS AND PARTNER; KENYON AND KENYON LLP; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

10) Family number: 42476559 (JP2008240125A)

© PatBase

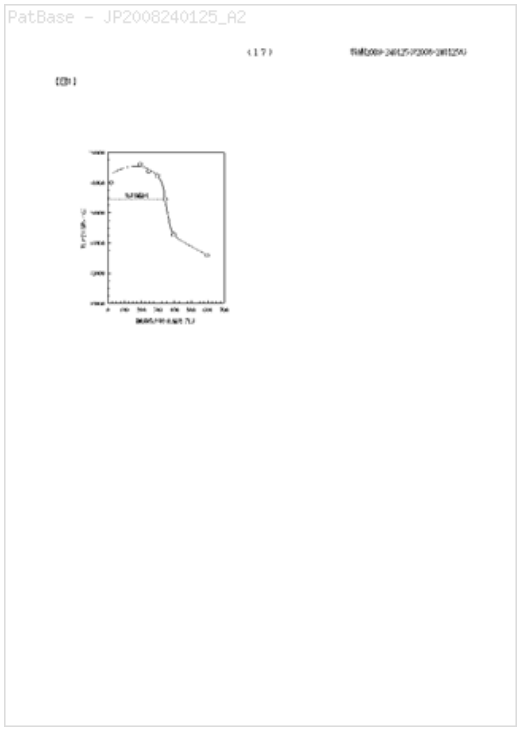
Title: HIGH RIGIDITY AND **HIGH** **STRENGTH** STEEL SHEET HAVING EXCELLENT WORKABILITY, AND ITS PRODUCTION METHOD

Abstract: Source: JP2008240125A PROBLEM TO BE SOLVED: To provide a steel sheet having **high** **strength** and high rigidity, and further having excellent workability. SOLUTION: **The** **steel** **sheet** has a componential composition comprising 0.05 to 0.15 percent C, less than or equal to 1.5 percent Si, 1.5 to 3.0 percent Mn, less than or equal to 0.05 percent P, less than or equal to 0.01 percent S, less than or equal to 0.5 percent Al, less than or equal to 0.01 percent N, 0.02 to 0.15 percent Nb and 0.01 to 0.15 percent Ti, and the balance substantially iron with inevitable impurities, and has a structure where the area ratio of a ferrite phase is greater than or equal to 50 percent and the area ratio of a martensitic phase is greater than or equal to 5 percent, and also, ODF analysis strength in the (112)[1-10] orientation is greater than or equal to 5, and in which tensile strength (TS) is controlled to greater than or equal to 590 MPa, a ratio between yield strength (YS) and the tensile strength, YS/TS is controlled to less than

or equal to 0.70, a product between the tensile strength and the total elongation (El), TSxEl is controlled to greater than or equal to 16,800 MPax percent, and a Young's **modulus** in the direction orthogonal to the rolling direction is controlled to greater than or equal to 230 GPa.

Classifications:

International (IPC 8-9): B21B3/00 C21D9/46 C22C38/00 C22C38/14 C22C38/58 (Advanced/Invention);
B21B3/00 C21D9/46 C22C38/00 C22C38/14 C22C38/58 (Core/Invention)



Family:

Publication number	Publication date	Application number	Application date
JP2008240125 A2	20081009	JP20070085766	20070328
JP5157215 B2	20130306	JP20070085766	20070328

Priority:

JP20070085766 20070328

Probable Assignee: JFE STEEL KK

Assignee(s): (std)**:** JFE STEEL KK

Assignee(s): JFE STEEL CORP

Inventor(s): (std)**:** KIZU TARO ; NAGATAKI YASUNOBU ; SAITO ISATO ; TANAKA YASUSHI