

(19)



(11)

EP 2 695 957 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
02.07.2014 Bulletin 2014/27

(43) Date of publication A2:
12.02.2014 Bulletin 2014/07

(21) Application number: **13005148.5**

(22) Date of filing: **24.07.2008**

(51) Int Cl.:
C22C 9/06 (2006.01) **C22C 9/02** (2006.01)
C22C 9/00 (2006.01) **C22F 1/08** (2006.01)
H01R 13/03 (2006.01) **H01R 13/11** (2006.01)
H01R 43/16 (2006.01)

(84) Designated Contracting States:
**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**

(30) Priority: **07.08.2007 JP 2007205630**
07.09.2007 JP 2007232641
27.09.2007 JP 2007252036
27.09.2007 JP 2007252037

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
08791572.4 / 2 184 371

(71) Applicant: **Kabushiki Kaisha Kobe Seiko Sho**
Chuo-ku,
Kobe-shi,
Hyogo 651-8585 (JP)

(72) Inventors:
• **Aruga, Yasuhiro**
Kobe-shi,
Hyogo, 651-2271 (JP)
• **Hashimoto, Daisuke**
Shimonoseki-shi,
Yamaguchi, 752-0953 (JP)
• **Nomura, Koya**
Shimonoseki-shi,
Yamaguchi, 752-0953 (JP)

(74) Representative: **Müller-Boré & Partner**
Patentanwälte PartG mbB
Friedenheimer Brücke 21
80639 München (DE)

(54) **Copper alloy sheet**

(57) The present invention relates to a Cu-Ni-Sn-P-based copper alloy sheet having a specific composition, where the dislocation density measured using the value obtained by dividing the half-value breadth of the X-ray diffraction intensity peak from {200} plane in the copper alloy sheet surface by the peak height is set to a given

value or more and press punchability is thereby enhanced. The Cu-Ni-Sn-P-based copper alloy sheet of the present invention is excellent in the properties required for a terminal or connector and further has excellent press punchability.

EP 2 695 957 A3



EUROPEAN SEARCH REPORT

Application Number
EP 13 00 5148

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2006/132317 A1 (KOBE STEEL LTD [JP]; ARUGA YASUHIRO [JP]; NOMURA KOYA [JP]; KAJIHARA K) 14 December 2006 (2006-12-14) * claims 1-9 * * tables 1-4 * * paragraph [0089] - paragraph [0142] * * paragraph [0040] - paragraph [0057] * -----	1-4	INV. C22C9/06 C22C9/02 C22C9/00 C22F1/08 H01R13/03 H01R13/11 H01R43/16
X	EP 1 801 249 A1 (KOBE STEEL LTD [JP]) 27 June 2007 (2007-06-27) * claims 1-4 * * tables 1-2 * * paragraph [0045] - paragraph [0090] * -----	1-4	
X	EP 1 612 285 A1 (DOWA MINING CO [JP]) 4 January 2006 (2006-01-04) * claims 1-7 * * examples 1-2 * * tables 1-3 * * paragraph [0010] - paragraph [0077] * -----	1-4	
X	JP 2006 342389 A (KOBE STEEL LTD) 21 December 2006 (2006-12-21) * the whole document * -----	1-4	TECHNICAL FIELDS SEARCHED (IPC) C22C C22F H01R
X	JP 2001 262297 A (SUMITOMO METAL MINING CO; SUMITOMO KINZOKU KOZAN SHINDO) 26 September 2001 (2001-09-26) * the whole document * -----	1-4	
X	JP 2000 256814 A (SUMITOMO METAL MINING CO) 19 September 2000 (2000-09-19) * the whole document * -----	1-4	
X	JP 2001 262255 A (SUMITOMO METAL MINING CO; SUMITOMO KINZOKU KOZAN SHINDO) 26 September 2001 (2001-09-26) * the whole document * -----	1-4	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 23 May 2014	Examiner Vlassi, Eleni
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



EUROPEAN SEARCH REPORT

 Application Number
 EP 13 00 5148

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	JP 2006 213999 A (KOBE STEEL LTD) 17 August 2006 (2006-08-17) * the whole document *	1-4	
A	US 2002/108685 A1 (HATAKEYAMA KOICHI [JP] ET AL) 15 August 2002 (2002-08-15) * claims 1-17 * * paragraph [0023] - paragraph [0067] *	1-4	
A	EP 0 859 065 A1 (DOWA MINING CO [JP]; YAZAKI CORP [JP]) 19 August 1998 (1998-08-19) * claims 1-6 * * tables 1-4 * * page 3, line 10 - page 13, line 10 *	1-4	
A	US 2005/092404 A1 (ARUGA YASUHIRO [JP] ET AL) 5 May 2005 (2005-05-05) * claims 1-5 * * paragraph [0020] - paragraph [0051] *	1-4	
A	JP H11 343527 A (KOBE STEEL LTD) 14 December 1999 (1999-12-14) * the whole document *	1-4	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search		Date of completion of the search	Examiner
The Hague		23 May 2014	Vlassi, Eleni
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 00 5148

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-05-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006132317 A1	14-12-2006	CN 101693960 A	14-04-2010
		EP 1889934 A1	20-02-2008
		EP 2366807 A1	21-09-2011
		KR 20080007403 A	18-01-2008
		KR 20100003376 A	08-01-2010
		US 2009116996 A1	07-05-2009
		US 2011182767 A1	28-07-2011
		WO 2006132317 A1	14-12-2006

EP 1801249 A1	27-06-2007	CN 1986857 A	27-06-2007
		EP 1801249 A1	27-06-2007
		JP 4680765 B2	11-05-2011
		JP 2007169741 A	05-07-2007
		KR 20070066968 A	27-06-2007
		KR 20080072808 A	07-08-2008
		US 2007148032 A1	28-06-2007

EP 1612285 A1	04-01-2006	CN 1800426 A	12-07-2006
		EP 1612285 A1	04-01-2006
		JP 4660735 B2	30-03-2011
		JP 2006016667 A	19-01-2006
		US 2006016528 A1	26-01-2006
		US 2009014102 A1	15-01-2009

JP 2006342389 A	21-12-2006	CN 101171349 A	30-04-2008
		JP 3871064 B2	24-01-2007
		JP 2006342389 A	21-12-2006

JP 2001262297 A	26-09-2001	JP 4396874 B2	13-01-2010
		JP 2001262297 A	26-09-2001

JP 2000256814 A	19-09-2000	NONE	

JP 2001262255 A	26-09-2001	JP 4393663 B2	06-01-2010
		JP 2001262255 A	26-09-2001

JP 2006213999 A	17-08-2006	JP 4350049 B2	21-10-2009
		JP 2006213999 A	17-08-2006

US 2002108685 A1	15-08-2002	JP 4729680 B2	20-07-2011
		JP 2002180165 A	26-06-2002
		US 2002108685 A1	15-08-2002

EP 0859065 A1	19-08-1998	DE 69823713 D1	17-06-2004
		DE 69823713 T2	28-04-2005
		EP 0859065 A1	19-08-1998

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 00 5148

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-05-2014

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		JP H10226835 A	25-08-1998
US 2005092404 A1	05-05-2005	CN 1614052 A	11-05-2005
		DE 102004053346 A1	21-07-2005
		JP 4041452 B2	30-01-2008
		JP 2005139501 A	02-06-2005
		KR 20050043655 A	11-05-2005
		US 2005092404 A1	05-05-2005
JP H11343527 A	14-12-1999	JP 3344700 B2	11-11-2002
		JP H11343527 A	14-12-1999

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82