

Title (en)

Nickel-iron based soldering material and soldering method

Title (de)

Hartlot auf Nickel-Eisen-Basis sowie Verfahren zum Hartlöten

Title (fr)

Matériau de brasage à base de nickel et de fer et procédé de brasage

Publication

**EP 1897650 A2 20080312 (DE)**

Application

**EP 07115281 A 20070830**

Priority

DE 102006042792 A 20060908

Abstract (en)

Hard solder has the general formula  $\text{Fe}_a\text{Ni}_{\text{Rest}}\text{Si}_b\text{B}_c\text{M}_d$ .  $a = 5 - 35$  atom%;  $b = 1 - 15$  atom%;  $c = 5 - 15$  atom%;  $d = 0 - 4$  atom%; and Rest indicates the content of nickel and incidental impurities; M is one or more of: cobalt, chromium, manganese, niobium, molybdenum, tantalum, copper, silver, palladium or carbon. The solder has a maximum liquidus temperature of 1025[deg] C. Independent claims are included for: (A) amorphous, ductile hard solder sheets of the same composition; (B) heat exchangers with solder beads produced from the hard solder; (C) heat exchangers with solder beads produced from the hard solder sheets; (D) a bonding method for two components comprising soldering with the hard solder; (E) a bonding method for two components comprising soldering using the hard solder sheets; (F) a method for making the hard solder sheets by heating a melt of the solder and preparing the sheets by cooling the melt at a rate of more than 105>[deg] C/sec; (G) a bonding method for two components comprising preparing hard solder sheets using the method described and soldering the components using the product; (H) hard soldered objects produced using the solder; and (I) hard soldered objects produced using the solder sheets.

Abstract (de)

Hartlot sowie eine amorphe, duktile Hartlotfolie mit einer Zusammensetzung, die im Wesentlichen aus  $\text{Fe}_a\text{Ni}_{\text{Rest}}\text{Si}_b\text{B}_c\text{M}_d$  mit  $5 \leq a \leq 35$  Atom%;  $1 \leq b \leq 15$  Atom%;  $5 < c \leq 15$  Atom%;  $0 \leq d \leq 4$  Atom%; Rest Ni und beiläufigen Verunreinigungen besteht, wobei M eines oder mehrere der Elemente Co, Cr, Mn, Nb, Mo, Ta, Cu, Ag, Pd oder C ist, und mit einer Liquidustemperatur  $T_L \leq 1025^\circ\text{C}$ .

IPC 8 full level

**B23K 35/30** (2006.01); **C22C 19/03** (2006.01); **C22C 38/08** (2006.01); **C22C 45/02** (2006.01); **C22C 45/04** (2006.01)

CPC (source: EP)

**C22C 19/03** (2013.01); **C22C 38/08** (2013.01); **C22C 45/02** (2013.01); **C22C 45/04** (2013.01)

Cited by

CN114101970A; CN103060707A; WO2016034395A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK YU

DOCDB simple family (publication)

**EP 1897650 A2 20080312**; **EP 1897650 A3 20080514**; DE 102006042792 A1 20080327

DOCDB simple family (application)

**EP 07115281 A 20070830**; DE 102006042792 A 20060908