

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 $\text{Fe}_a\text{Ni}_{\text{Rest}}\text{Si}_b\text{B}_c\text{M}_d$. $a = 5 - 35 \text{ atom\%}$; $b = 1 - 15 \text{ atom\%}$; $c = 5 - 15 \text{ atom\%}$; $d = 0 - 4 \text{ atom\%}$; 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 $1025[\text{deg}] \text{ C}$. 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 $105 > [\text{deg}] \text{ C/sec}$; (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 $5 \leq a \leq 35 \text{ Atom\%}$; $1 \leq b \leq 15 \text{ Atom\%}$; $5 < c \leq 15 \text{ Atom\%}$; $0 \leq d \leq 4 \text{ Atom\%}$; 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

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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

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