(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 468 777 A8

(12) **CORRECTED EUROPEAN PATENT APPLICATION**
Note: Bibliography reflects the latest situation

(15) Correction information:
Corrected version no 1 (W1 A1)
INID code(s) 72

(48) Corrigendum issued on:
25.05.2005 Bulletin 2005/21

(43) Date of publication:
20.10.2004 Bulletin 2004/43

(21) Application number: **04291027.3**

(22) Date of filing: **16.04.2004**

(51) Int Cl.[7]: **B23K 35/26**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL HR LT LV MK

(30) Priority: **17.04.2003 JP 2003112287**

(71) Applicant: **Senju Metal Industry Co., Ltd.**
Tokyo, 120-8555 (JP)

(72) Inventors:
- **Amagai, Masazumi**
  Tsukuba-shi, Ibaraki (JP)
- **Watanabe, Masako**
  Oita-shi, Oita (JP)
- **Murata, Kensho**
  Beppu-shi, Oita (JP)
- **Toyoda, Yoshitaka**
  Shatte-shi, Saitama (JP)
- **Ueshima, Minoru**
  Misato-shi, Saitama (JP)
- **Ohnishi, Tsukasa**
  Souka-shi, Saitama (JP)
- **Tashima, Takeshi**
  Ohnojoshi, Fukuoka (JP)
- **Souma, Daisuke**
  Haga-gun, Tochigi (JP)
- **Roppongi, Takahiro**
  Kawachi-gun, Tochigi (JP)
- **Okada, Hiroshi**
  Souka-Shi, Saitama (JP)

(74) Representative:
Callon de Lamarck, Jean-Robert et al
Cabinet Régimbeau
20, rue de Chazelles
75847 Paris cedex 17 (FR)

(54) **Lead free solder**

(57) A lead-free solder includes 0.05 - 5 mass % of Ag, 0.01 - 0.5 mass % of Cu, at least one of P, Ge, Ga, Al, and Si in a total amount of 0.001 - 0.05 mass %, and a remainder of Sn. One or more of a transition element for improving resistance to heat cycles, a melting point lowering element such as Bi, In, or Zn, and an element for improving impact resistance such as Sb may be added.

EP 1 468 777 A8