Claims

1. Solder paste, comprising
   a) flux, comprising
      i) adipic acid;
      ii) oxalic acid; and
      iii) amine selected from the group consisting of amine component A and amine component B, whereby
      amine component A is a diamine with tertiary amino groups and amine component B is a diamine or polyamine, in which at least 2 amino groups are separated from each other by at least 3 carbon atoms and which comprises at least 4 carbon atoms; and
   b) a solder.

2. Solder paste according to claim 1,
characterised in that
amine component B comprises at least one primary amino.

3. Solder paste according to any one or both of the claims 1 and 2,
characterised in that
amine component A is selected from the group consisting of 1,2-tetramethylethylenediamine, 1,2-tetraethylethylenediamine, and 1,2-tetrapropylethylenediamine.

4. Solder paste according to any one or more of the claims 1 to 3,
characterised in that
amine component B is selected from the group consisting of N-coco-1,3-diaminopropane, 1,6-diaminohexane, 1,7-diaminoheptane, 1,8-diaminooctane, 1,9-diaminononane and 1,10-diaminodecane.

5. Solder paste according to any one or more of the claims 1 to 4,
characterised in that
the flux comprises amine component A and/or amine component B in an amount of 0.1 to 2.0% by weight, preferably of 0.4 to 1.0% by weight, each relative to the total weight of the flux.

6. Solder paste according to any one or more of the claims 1 to 5, characterised in that the flux contains adipic acid in an amount of 7 to 13% by weight, preferably of 8 to 12% by weight, each relative to the total weight of the flux.

7. Solder paste according to any one or more of the claims 1 to 6, characterised in that the flux contains oxalic acid in an amount of 0.3 to 2.0% by weight, preferably of 0.4 to 1.5% by weight, particularly preferably 0.45 to 1.0% by weight, each relative to the total weight of the flux.

8. Solder paste according to any one or more of the claims 1 to 7, characterised in that the flux comprises, in addition, dicarboxylic acids other than oxalic acid and adipic acid in an amount of 0 to 2.0% by weight, preferably in an amount of 0.01 to 1.0% by weight, each relative to the total weight of the flux.

9. Solder paste according to any one or more of the claims 1 to 8, characterised in that the total amount of all dicarboxylic acids in the flux is maximally 15% by weight, preferably 7 to 13% by weight, in particular 8 to 12% by weight, each relative to the total weight of the flux.

10. Solder paste according to any one or more of the claims 1 to 9, characterised in that the flux comprises, in addition, monoamine, preferably in an amount of 0.5 to 5.5% by weight, particularly preferably of 1.0 to 5.0% by weight, each relative to the total weight of the flux, whereby the monoamine preferably is selected from the group consisting of secondary monoamine and tertiary monoamine.

11. Solder paste according to any one or more of the claims 1 to 10, characterised in that the solder is a tin-based solder, whereby the solder preferably comprises, in addition, 0.1 to 8% by weight, particularly preferably 0.2 to 6% by weight, silver and/or 0.1 to 1.5% by weight, preferably 0.2 to 1.0% by weight, copper, each relative to the total weight of the solder.

12. Solder paste according to any one or more of the claims 1 to 11 characterised in that the solder paste comprises solder in an amount of 80 to 97% by weight, preferably of 83 to 95% by weight, in particular 85 to 93% by weight.

13. Method for producing a solder paste according to any one or more of the claims 1 to 12, comprising the steps of:
- mixing the components of the flux and
- adding a solder powder.

14. Method for the mounting of a component on a substrate, comprising the following steps:
a) Providing a component having electrical connecting sites;
b) providing a substrate, whereby the substrate comprises a surface that is provided with a solder paste according to any one or more of the claims 1 to 12;
c) contacting the surface of the component to the surface of the substrate by means of the solder paste; and
d) heating the solder paste beyond the liquidus temperature of the solder.

15. Module comprising
1) a component with electrical connecting sites with a first surface;
2) a substrate with at least one second surface; and
3) a solder paste according to any one or more of the claims 1 to 12 that directly contacts the first surface and the second surface.

16. Component that is mounted on a substrate and can be obtained according to a method according to claim 14.

Claims

1. Soldering paste, comprising
   a) flux, comprising
      i) adipic acid;
      ii) oxalic acid; and
      iii) amine selected from the group consisting of amine component A and amine component B, whereby amine component A is selected from the group consisting of 1,2-tetramethylethylenediamine, 1,2-tetraethylethylenediamine, and 1,2-tetrapropylethylenediamine and whereby amine component B is selected from the group consisting of N-coco-1,3-diaminopropane, 1,6-diaminohexane, 1,7-diaminoheptane, 1,8-diaminooctane, 1,9-diaminononane, and 1,10-diaminodecane; and
   b) a solder.
2. Soldering paste according to claim 1, characterised in that the flux comprises amine component A and/or amine component B in an amount of 0.1 to 2.0% by weight, relative to the total weight of the flux.
3. Soldering paste according to claim 1, characterised in that the flux comprises adipic acid in an amount of 7 to 13% by weight, relative to the total weight of the flux.
4. Soldering paste according to any one or more of the claims 1 to 3, characterised in that the flux comprises oxalic acid in an amount of 0.3 to 2.0% by weight, relative to the total weight of the flux.
5. Soldering paste according to any one or more of the claims 1 to 4, characterised in that the flux comprises in addition, dicarboxylic acids other than oxalic acid and adipic acid in an amount of 0 to 2% by weight, relative to the total weight of the flux.
6. Soldering paste according to any one or more of the claims 1 to 5, characterised in that the total amount of all dicarboxylic acids in the flux is maximally 15% by weight, relative to the total weight of the flux.
7. Soldering paste according to any one or more of the claims 1 to 6, characterised in that the flux contains, in addition, monoamine, relative to the total weight of the flux, whereby the monoamine is selected from the group consisting of secondary monoamine and tertiary monoamine.

8. Soldering paste according to any one or more of the claims 1 to 7, characterised in that the solder is a tin-based solder.

9. Soldering paste according to any one or more of the claims 1 to 8, characterised in that the soldering paste comprises solder in an amount of 80 to 97% by weight, relative to the total weight of the soldering paste.

10. Method for producing a soldering paste according to any one or more of the claims 1 to 9, comprising the steps of:
- mixing the components of the flux and
- adding a solder powder.

11. Method for the mounting of a component on a substrate, comprising the following steps:

a) Providing a component having electrical connecting sites;

b) providing a substrate, whereby the substrate comprises a surface that is provided with a soldering paste according to any one or more of the claims 1 to 9;

c) contacting the surface of the component to the surface of the substrate by means of the soldering paste; and

d) heating the soldering paste beyond the liquidus temperature of the solder.

12. Module comprising

1) a component with electrical connecting sites with a first surface;

2) a substrate with at least one second surface; and

3) a soldering paste according to any one or more of the claims 1 to 9 that directly contacts the first surface and the second surface.