Claims

1. A process for producing electrically conductive bonds between solar cells, comprising the following steps:

   (a) transferring an adhesive comprising electrically conductive particles from a carrier to the substrate by irradiating the carrier with a laser,

   (b) partly drying and/or curing the adhesive transferred to the substrate to form an adhesive layer,

   (c) bonding the adhesive to an electrical connection,

   (d) curing the adhesive layer.

2. The process according to claim 1, wherein the transfer in step a) is preceded by application of the adhesive to the carrier.

3. The process according to claim 2, wherein the adhesive is applied to the carrier by a coating process.

4. The process according to claim 3, wherein the coating process is a printing, casting, rolling or spraying process.

5. The process according to any of claims 1 to 4, wherein the laser generates a laser beam having a wavelength in the range from 150 to 10 600 nm.

6. The process according to any of claims 1 to 5, wherein the laser is a solid-state laser, a fiber laser, a diode laser, a gas laser or an excimer laser.

7. The process according to any of claims 1 to 6, wherein the adhesive is applied to the top and bottom sides of the substrate to form the adhesive layer.

8. The process according to any of claims 1 to 7, wherein the carrier is a rigid or flexible plastic or glass which is transparent to the laser radiation used.

9. An adhesive for performing the process according to any of claims 1 to 8, comprising 20 to 98% by weight of electrically conductive particles, 0.01 to 60% by weight of an organic binder component used as a matrix material, based in each case on the solids content of the adhesive, 0.005 to 20% by weight of absorbent based on the

weight of the conductive particles in the adhesive, and 0 to 50% by weight of a dispersant and 1 to 20% by weight of solvent, based in each case on the total mass of the undried and uncured adhesive.

10. The adhesive according to claim 9, wherein the electrically conductive particles comprise at least one metal and/or carbon.

11. The adhesive according to claim 10, wherein the metal is selected from the group consisting of silver, gold, aluminum, copper, zinc, tin, platinum, palladium, nickel and titanium.

12. The adhesive according to any of claims 9 to 11, wherein the electrically conductive particles have different particle geometries.

13. The adhesive according to any of claims 9 to 12, wherein the absorbent is selected from carbon, lanthanum hexaboride and/or nanoparticles of silver, gold, platinum, palladium, tungsten, nickel, tin, iron, indium tin oxide, tungsten oxide, titanium carbide or titanium nitride.

14. The adhesive according to claim 13, wherein the nanoparticles are spherical particles or are in the form of prisms.

15. The adhesive according to claim 13 or 14, wherein the carbon is in the form of carbon black, graphite, graphene or carbon nanotubes.

Claims

1. A process for producing electrically conductive bonds between solar cells, comprising the following steps:

   (a) transferring an adhesive comprising electrically conductive particles from a carrier to a substrate of a solar cell by irradiating the carrier with a laser,

   (b) partly drying and/or curing the adhesive transferred to the substrate to form an adhesive layer,

   (c) bonding the adhesive to an electrical connection, wherein the electrical connection serves to connect a plurality of solar cells to form a photovoltaic module,

   (d) curing the adhesive layer.

2. The process according to claim 1, wherein the transfer in step a) is preceded by application of the adhesive to the carrier.

3. The process according to claim 2, wherein the adhesive is applied to the carrier by a coating process.

4. The process according to claim 3, wherein the coating process is a printing, casting, rolling or spraying process.

5. The process according to any of claims 1 to 4, wherein the laser generates a laser beam having a wavelength in the range from 150 to 10 600 nm.

6. The process according to any of claims 1 to 5, wherein the laser is a solid-state laser, a fiber laser, a diode laser, a gas laser or an excimer laser.

7. The process according to any of claims 1 to 6, wherein the adhesive is applied to the top and bottom sides of the substrate to form the adhesive layer.

8. The process according to any of claims 1 to 7, wherein the carrier is a rigid or flexible plastic or glass which is transparent to the laser radiation used.