electrode connection and sealing; a method (a so-called capillary method) in which electrical connection between an electrode on a semiconductor chip and a substrate is first established and then a liquid adhesive composition is applied on a side or a plurality of sides of the chip for sealing the gap between the wiring substrate and the semiconductor chip by capillarity and the like. By any of the methods, it is required to apply a liquid adhesive composition all over the wiring substrate, and to fill the liquid adhesive composition uniformly in the gap between the semiconductor chip and the wiring substrate, and the like. Therefore, occasionally, a syringe, the substrate and the like are heated to room temperature or higher as needed in order to increase flowability of the adhesive composition.

[0006]

However, when an underfill sealant utilizing a radical curing reaction is used, there has been a problem in that a curing reaction of an underfill composition may occasionally progress prematurely before carrying out sealing, which leads to inadequate electrode connection or poor work efficiency. Such a problem tends to occur when an adhesive composition is in a state at room temperature or higher as described above, or the composition is in contact with a metal such as copper or an ion thereof contained in an electrode part and the like. In order to overcome the problem, whereas an additive is mixed in an underfill sealant composition or the working temperature is lowered, it has not been sufficient. Consequently, further improvement of an adhesive composition to be used for an electronic device has been sought after.

Citation List

Patent Literature

[0007]

Patent Literature 1: Japanese Patent Laid-Open No. 2010-226098

Patent Literature 2: Japanese Patent Laid-Open No. 2005-333085

Patent Literature 3: Japanese Patent Laid-Open No. 2008-98646

Summary ~~of Invention~~

Technical Problem

[0008]

An object of the present ~~invention~~ disclosure is to solve the aforedescribed problems in using a conventional adhesive composition and to provide a composition

which improves productivity of electronic devices. Further, another object is to provide an electronic device or an electronic appliance containing the composition.

Solution to Problem

[0009]

In an aspect, there is provided a composition for electronic device comprising:

(a) a (meth)acrylic compound;

(b) a maleimide compound;

(c) a particle having a functional group having metal scavenging functionality; and

(d) a radical initiator,

wherein said maleimide compound is present from 1 to 20% by weight based on the total weight of said composition, and wherein said radical initiator is an organic peroxide.

In another aspect, there is provided an electronic device comprising a cured product of the composition as disclosed herein.

In yet another aspect, there is provided an electronic appliance comprising the electronic device as defined above.

The present ~~invention~~ disclosure relates to the following items.

[0010]

1. A composition for electronic device comprising:

(a) a (meth)acrylic compound and

(c) a particle having a functional group having metal scavenging functionality.

[0011]

2. The composition according to the above item 1, wherein the functional group having metal scavenging functionality is selected from the group consisting of carboxy group, amine group and imidazole group.

[0012]

3. The composition according to the above item 1 or 2, wherein the particle is porous polystyrene and/or silica gel having one or more functional groups having metal scavenging functionality.

[0013]

4. The composition according to any one of the above items 1 to 3, further comprising (b) a maleimide compound.

[0014]

5. The composition according to the above item 4, wherein the maleimide compound comprises a bismaleimide.

[0015]

6. The composition according to any one of the above items 1 to 5, further comprising a radical initiator.

[0016]

7. The composition according to any one of the above items 1 to 6, which is used as an underfill sealant.

[0017]

8. The composition according to any one of the above items 1 to 7, which is used in flip chip mounting.

[0018]

CLAIMS

1. A composition for electronic device comprising:

(a) a (meth)acrylic compound;

(b) a maleimide compound; ~~and~~

(c) a particle having a functional group having metal scavenging functionality; and

(d) a radical initiator,

wherein said maleimide compound is present from 1 to 20% by weight based on the total weight of said composition, and wherein said radical initiator is an organic peroxide.

2. The composition according to Claim 1, wherein the functional group having metal scavenging functionality is selected from the group consisting of carboxy group, amine group and imidazole group.

3. The composition according to Claim 1 or 2, wherein the particle is porous polystyrene and/or silica gel having one or more functional groups having metal scavenging functionality.

4. The composition according to any one of claims 1 to 3, wherein the maleimide compound comprises a bismaleimide.

~~5. The composition according to any one of Claims 1 to 4, further comprising a radical initiator.~~

6. The composition according to any one of Claims 1 to 5, which is used as an underfill sealant.

7. The composition according to any one of Claims 1 to 6, which is used in flip chip mounting.

8. An electronic device comprising a cured product of the composition according to any one of Claims 1 to 7.

9. An electronic appliance comprising the electronic device according to Claim 8.