

ADHESIVE COMPOSITION AND ADHESIVE TAPE

TECHNICAL FIELD

The present invention relates to an adhesive composition and an adhesive tape. Specifically, the present invention relates to a thermally conductive pressure-sensitive adhesive composition, and a thermally conductive pressure-sensitive adhesive tape with excellent bond strength and high thermal conductivity.

BACKGROUND

The rapid developments in electronic product and commodity industry bring about huge demands for user-friendly interface bonding materials. As a conventional method in the art, a thermal interface material has to be used with mechanical bonding together so as to bond components in electric and electronic products. Specifically, holes need to be drilled in chips and radiators. In addition, screws, gaskets, screw caps as well as thermal grease are needed, and they are connected by a very complicated, high cost and time-consuming approach.

There is a need for a user-friendly interface adhesive tape to replace mechanical bolts used in the conventional method to bond two components in electric and electronic products. The bond strength of the tape is very important for achieving a long-term stable fixation of the components in the product. To be used in electric and electronic products, the tape should also provide efficient heat dissipation.

Therefore, there is a need for an adhesive tape providing excellent bond strength and high thermal conductivity, which can be conveniently used to bond components in electric and electronic products, so as to offer a “one-stop and easy solution” to the customers.

SUMMARY

The present application provides a thermally conductive pressure-sensitive adhesive tape which can be used to bond components in electric and electronic products in a simple, effective and low cost way without using any mechanical attachment means, and can simultaneously provide a balanced combination of high bond strength and high thermal conductivity, as well as halogen-free flame retardant property and high electrical insulation property, if necessary. The present application further provides a thermally conductive pressure-sensitive adhesive composition useful for preparing the thermally conductive pressure-sensitive adhesive tape.

One ~~embodiment aspect~~ provides a thermally conductive pressure-sensitive adhesive composition, based on the total weight of the composition, comprising:

- (a) 5-70% by weight of an epoxy component;
- (b) 5-60% by weight of thermally conductive material;
- (c) 0.001-10% by weight of a photoinitiator;
- (d) 0-40% by weight of a thermoplastic polymer;
- (e) 0-50% by weight of a hydroxyl-functional component; and
- (f) 0-50% by weight of a halogen-free flame retardant.

Another embodiment provides a thermally conductive pressure-sensitive adhesive tape, comprising:

- (i) a backing layer; and
- (ii) a thermally conductive pressure-sensitive adhesive layer provided on at least one side of the backing layer, based on the total weight of the adhesive layer, comprising:
 - (a) 5-70% by weight of an epoxy component;
 - (b) 5-60% by weight of thermally conductive material;
 - (c) 0.001-10% by weight of a photoinitiator;
 - (d) 0-40% by weight of a thermoplastic polymer;
 - (e) 0-50% by weight of a hydroxyl-functional component; and
 - (f) 0-50% by weight of a halogen-free flame retardant.

Another aspect provides a thermally conductive pressure-sensitive adhesive tape, comprising:

a backing layer; and

a first thermally conductive adhesive layer disposed on one side of the backing layer and comprising the composition as defined herein.

The above and other features and advantages of the present invention will become apparent from the following detailed description of embodiments and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is further described with reference to the accompanying figures, wherein:

Figure 1 is a cross-sectional view of an adhesive film tape in one embodiment;

Figure 2 is a cross-sectional view of a double coated adhesive tape in another embodiment; and

Figure 3 is a cross-sectional view of a single coated adhesive tape in another

embodiment.

DETAILED DESCRIPTION

The thermally conductive pressure-sensitive adhesive tapes according to some embodiments of the present invention have excellent adhesion strength, high thermal