

THERMAL INTERFACE MATERIALS

ABSTRACT

A crosslinkable thermal interface material is produced by combining at least one rubber compound, at least one amine resin and at least one thermally conductive filler. This interface material takes on the form of a liquid or "soft gel". The gel state is brought about through a crosslinking reaction between the at least one rubber compound composition and the at least one amine resin composition. Once the foundation composition that comprises at least one rubber compound, at least one amine resin, and at least one thermally conductive filler has been prepared, the composition must be compared to the needs of the electronic component, vendor, or electronic product to determine if a phase change material is needed to change some of the physical properties of the composition. A method for forming the crosslinkable thermal interface materials disclosed herein comprises a) providing at least one saturated rubber compound, b) providing at least one amine resin, c) crosslinking the at least one saturated rubber compound and the at least one amine resin to form a crosslinked rubber-resin mixture, d) adding at least one thermally conductive filler to the crosslinked rubber-resin mixture, and e) adding a wetting agent to the crosslinked rubber-resin mixture. This method can also further comprise adding at least one phase change material to the crosslinked rubber-resin mixture. The contemplated thermal interface material can be provided as a dispensable liquid paste, a gel, a tape, or a film. Applications of the contemplated thermal interface materials described herein comprise incorporating the materials into a layered material, an electronic component or a finished electronic product.

No Figure