CHEMICAL RESISTANT POLYURETHANE ADHESIVE

Summary

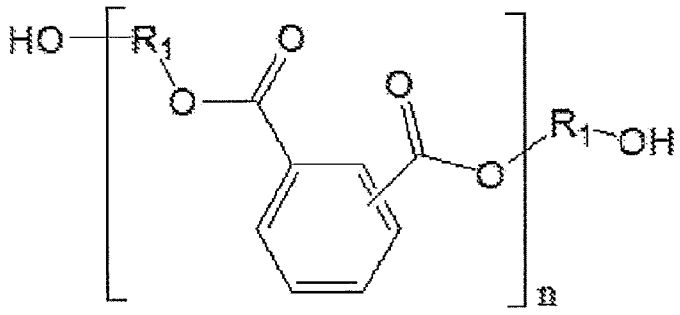
In one aspect, there is provided a pressure sensitive adhesive composition comprising a polyurethane polymer that comprises the reaction product of an aliphatic polyisocyanate component, a polyol component, and a functional acid containing compound; wherein the polyol component has a total solubility parameter ranging from 10 to 14 $(cal/cm^3)^{1/2}$; and wherein the pressure sensitive adhesive has a G' less than 1 MPa at 25°C and a frequency of 1 hertz.

In one embodiment, a pressure sensitive adhesive composition comprises a polyurethane polymer that comprises the reaction product of an aliphatic polyisocyanate component, a polyol component, and a functional acid containing compound. The polyol component has a total solubility parameter ranging from 10 to 14 $(cal/cm^3)^{1/2}$. The polyol component typically has hydrogen bonding ranging from 3.5 to 6. The polyol component typically comprises a polyester polyol, a polycaprolactone polyol, a polycarbonate polyol, or a combination thereof. The polyol component, aliphatic isocyanate component, or combination thereof comprises at least one six-membered (e.g. aromatic) ring structure. The polyol component, aliphatic isocyanate component, or combination thereof further comprises alkylene groups having at least 4, 5, or 6 carbon atoms.

In another aspect, there is provided a pressure sensitive adhesive composition comprising a polyurethane polymer, wherein the polyurethane polymer comprises the reaction product of an aliphatic polyisocyanate component comprising a polyisocyanate that is a liquid at 25°C; a polyol component comprising repeat units of an ortho- or meta-phthalate, and an alkylene group comprising at least 4 carbon atoms; and a functional acid containing compound: wherein the pressure sensitive adhesive has a G' less than 1 MPa at 25°C and a frequency of 1 hertz.

In one embodiment, the polyurethane polymer comprises the reaction product of an aliphatic polyisocyanate component, a polyol component, and a functional acid containing compound, that comprises polymerized units of an ortho- or meta- phthalate and an alkylene group comprising at least 4 carbon atoms.

In one embodiment, the polyol component comprises a polymeric polyester polyol having the structure



wherein R_1 is independently an alkylene group comprising at least 4 carbon atoms, n is at least 2, and the ester group substituents are bonded to the ring at an ortho- or meta-position.

Also described are articles such as laminating tapes and protective films as well as methods of bonding substrates with the pressure sensitive adhesive and laminating tape.

In another aspect, there is provided a laminating tape comprising a substrate; and a layer of a pressure sensitive adhesive composition as defined herein disposed on a major surface of the substrate.

In another aspect, there is provided illuminated display device comprising a component bonded with the pressure sensitive adhesive as defined herein.

In another aspect, there is provided an article comprising a substrate; and a primer layer comprising the polyurethane polymer as defined herein.