structural integrity of the component. For specific applications it is also important that the properties of the adhesive composition, reflecting the elasticity at higher deformations are above certain values. These values should not be exceeded during the service life of the final product. The elasticity at higher deformations can be determined in a stress-strain test as reflected by the tensile stress at yield as well as the tensile strain at yield.

The hot-melt adhesive composition is used in a wide variety of applications, for example in combination with nonwoven materials such as for example disposable diapers and sanitary napkins, packaging such as for example case and carton sealing, bookbinding, bottle labelling, woodworking, textile and pressure sensitive application such as for example tapes, films and labels.

Although present-day hot-melt adhesive compositions have a wide range of applications there are still limitations related to their heat resistance properties. Low heat resistance of hot-melt adhesive compositions makes them unsuitable for applications where the articles containing the hot-melt adhesive are used at high temperature.

Another limitation of present-day hot-melt adhesive compositions is the lack of a proper combination of heat resistance and improved overall bond performance.

WO2014/014491 describes a hot-melt adhesive composition comprising a polypropylene impact copolymer, an olefin based elastomer, a tackifyer, a plasticizer, and a stabilizer or antioxidant where the viscosity of the composition is equal or less than 20000 mPas at 163°C.

Although WO2014/014491 describes a hot-melt adhesive composition comprising a polypropylene impact copolymer, the claimed invention is not based on the mechanical properties of such polypropylene impact copolymer. It mentions that the polypropylene impact copolymer as such is not suitable to produce effective adhesive performance. Another disadvantage is that the claimed hot-melt adhesive composition comprises many components other than the polypropylene impact copolymer, thereby adding more complexity to the hot-melt adhesive composition and its production.

Therefore there still exists a need for a hot-melt adhesive composition with a proper combination of heat resistance, flexibility and elasticity, thus resulting in a hot-melt adhesive composition with improved overall bond performance.

Summary

In one aspect, the present invention refers to an adhesive composition comprising at least one polypropylene copolymer, wherein such polypropylene copolymer has a) at least one comonomer selected from ethylene and/or C_4-C_{12} alpha-olefin, b) a total

comonomer content in the range of 4.5 to 20.0 wt%, c) Vicat-A temperature > 80 °C, as measured according to ISO 306, d) storage modulus (G´23) in the range of 100 to 1000 MPa as measured at 23 °C according to ISO 6721-02 and ISO 6721-07, e) melting temperature in the range of 120 to 160 °C as measured according to ISO 11357-3 and at least one of: a polymer other than the at least one polypropylene copolymer, a tackifying resin, a plasticizer, an additive and/or a filler.

In another aspect, the present invention refers to an article comprising the adhesive composition as disclosed herein and at least one substrate.

In yet another aspect, the present invention refers to a process to produce an article as disclosed herein wherein the process comprises at least the step of applying at least one adhesive composition as disclosed herein on at least one surface of the at least one substrate.

In a further aspect, the present invention refers to use of the adhesive composition as disclosed herein in the preparation of an article as disclosed herein.

In another aspect, the present invention refers to a process to prepare an adhesive composition as disclosed herein by combining at least one polypropylene copolymer with at least one of: a polymer other than the at least one polypropylene copolymer, a tackifying resin, a plasticizer, an additive and/or a filler.

The suitability for application at high temperature is reflected by the Vicat-A temperature. Vicat-A temperature stands for Vicat softening temperature which is the determination of the softening point for materials that have no definite melting point,