strength, comprising an elastomeric phase or rubber. Such a rubber can be part of a multistage polymer in form of core shell particles, with one stage that is a rubber or the elastomeric phase. These particles are prepared by emulsion polymerization to form a dispersion and can for example be recovered in powder form. They generally comprise a succession of "hard" and "soft" layers. Two-layer (soft-hard) or three-layer (hard-soft-hard) particles may thus be found. The particle size is generally less than 1 µm and more particularly between 50nm and 500 nm.

[014] The multistage polymer in form of core shell particles is available as agglomerated dry powder, the latter is dispersed in the matrix in order to obtain a homogenous distribution of the initial core shell particles. For certain thermosetting polymers or resins, as especially epoxy resin, but also for thermoplastic polymers it is very difficult or nearly impossible to disperse correctly these multistage polymer particles.

[015] Dispersing these usually weakly cross-linked discrete core shell particles in the liquid syrup or prepolymers in order to impregnate the fibrous reinforcement poses problems during the impregnation step. In fact the particles swell in the syrup which leads to gelation of the syrup. The viscosity is then too high and it is no longer possible to impregnate the fibrous substrate without defects appearing. To avoid this gelation phenomenon, the content of these particles in the resin must be limited to a very low content. However, such a content remains too low and does not conduct to the expected mechanical properties, especially as regards the impact strength.

[016] The objective of the embodiments disclosed herein is to obtain a stable preform that comprises a fibrous substrate and a multistage polymer.

[017] An objective of the embodiments disclosed herein is also to obtain a stable preform that comprises a fibrous substrate and a multistage polymer that can be used for producing an impact modified polymeric composites.

[018] Another objective of the embodiments disclosed herein is to find a method to introduce a multistage polymer in a polymeric composite

material or mechanical or structured parts or articles comprising the polymeric composite material.

[019] Still another objective of the embodiments disclosed herein is a process to obtain a stable preform that comprises a fibrous substrate and a multistage polymer.

[020] Still another objective of the embodiments disclosed herein is a process to obtain quickly a stable preform that comprises a fibrous substrate and a multistage polymer.

[021] Still another objective of the embodiments disclosed herein is a process to obtain a stable preform that comprises a fibrous substrate and a multistage polymer, by using the less possible organic solvents or preferably without using organic solvents.

[022] Still an additional objective of the embodiments disclosed herein is having a process for for manufacturing an impact modified polymeric composite material or mechanical or structured parts or articles comprising the impact modified polymeric composite material.

[BACKGROUND OF THE INVENTION]Prior art

[023] The document discloses EP1312453 discloses composite articles including prepregs, preforms, laminates and sandwich moldings and methods of making the same. In particularly a strand of a plurality of fibres coated with polymer particles is disclosed that have an average diameter of less than 5µm. The polymer particle is a thermoplastic polymer or a crosslinked thermoplastic polymer. Polymer particles of small size with between 0.1µm to 0.25µm having high molecular weights of at least 10,000g/mol are mentioned.

[024] None of the prior art documents discloses a preform or it process of preparation according to the invention.

[Brief description]

[024a] In an aspect, there is provided a preform comprising

a) a fibrous substrate and

b) a multi stage polymer,

wherein the quantity of multi stage polymer is between 3wt% and 50wt% of the preform

[025] Surprisingly it has been found that a preform comprising

a) a fibrous substrate and

b) a multi stage polymer,

wherein the quantity of multi stage polymer in the preform is between 3wt% and 50wt%, keeps its shape.

[026] Surprisingly it has also been found that a preform comprising

a) a fibrous substrate and

b) a multi stage polymer,

wherein the quantity of multi stage polymer in the preform is between 3wt% and 50wt%, can be used for manufacturing a polymeric composite material or mechanical or structured parts or articles comprising the polymeric composite material.

[0026a] In another aspect, there is provided a process for manufacturing the preform as defined above, said process comprising the steps of

a) bringing into contact a fibrous substrate and an aqueous dispersion of a multistage polymer

b) drying the product of step a),

c) heating the dried product of b).

[027] Surprisingly it has also been found that a process for manufacturing a preform comprising the steps of

a)bringing into contact a fibrous substrate and an aqueous dispersion of a multistage polymer

b) drying the product of step a),

c) heating the dried product of b),

wherein the quantity of multi stage polymer in the preform is between 3wt% and 50wt% yields to a preform that keeps its shape.

[0027a] In another aspect, there is provided the use of the preform as defined above for manufacturing a polymeric composite material or mechanical or structured parts or articles comprising the polymeric composite material.

[0027b] In another aspect, there is provided the use of the preform made by the process as defined above for manufacturing a polymeric composite material or mechanical or structured parts or articles comprising the polymeric composite material.

[Detailed description of the invention]

[028] According to a first aspect, the present invention relates to preform comprising

a) a fibrous substrate and

b) a multi stage polymer,

wherein the quantity of multi stage polymer in the preform is between 3wt% and 50wt%.

[029] According to a second aspect, the present invention relates to a process for manufacturing a preform comprising the steps

a) bringing into contact a fibrous substrate and an aqueous dispersion of a multistage polymer

b) drying the product of step a),

c) heating the dried product of b),

wherein the quantity of multi stage polymer in the preform is between 3wt% and 50wt%.

[030] In a third aspect the present invention relates to the use of a preform comprising

a) a fibrous substrate and