

The invention concerns a heat fusible textile for stiffening and its method of manufacture.

More particularly, it concerns heat fusible textiles intended for stiffening shirt fronts, false shirt fronts, stiffeners or covers for shirt fronts.

These products are intended to give clothing, the textiles or fabrics to which they are applied, the feel, flexibility and resilience required.

Various proposals have already been made to produce heat fusible textiles for stiffening and incorporating a layer of non woven textile.

For example, in accordance with patent FR-A-2 223 496, it is proposed to produce a cloth comprising at least one layer of non woven and non orientated fibres and at least one layer of additional fibres presenting a high degree of orientation. These layers are sewn together by synthetic threads and these are intended to be coated in order to produce a heat fusible product.

In accordance with patent US-A-3 600 259, it is also proposed to produce a heat fusible textile comprising a layer of non woven textiles stabilised by means of a knitted thread, the stitches passing through the textile. This textile is then coated with a layer of heat fusible adhesive. Patent US-A-4 737 396 and US-A-4 450 196 also describe products with a similar structure.

Also, in accordance with patent FR-A-2 283 972, for example, textiles with a coated woven mesh are known, these being intended for producing reinforced fabrics, for example, shirt fronts.

The several products manufactured using "MALI" techniques, that is, comprising a knitted fabric, the threads of the weft forming an interwoven layer, a knitted fabric comprising fibres and threads ("MALIWATT" technique) or the association of these two methods, have been used for many years in the manufacture of stiffening products.

Those heat fusible textiles incorporating a non woven layer have a high degree of flexibility but do not provide sufficient resilience.

Textile reinforcing fabrics with a woven mesh are most frequently used. They give satisfactory results but, for certain applications, it is advantageous to increase their volume and reduce their weight.

The purpose of this invention therefore concerns a heat fusible textile for stiffening which, although light in weight, possesses a considerable volume and has, at the same time, good resilience.

For that purpose, a heat fusible textile is proposed, this being used for stiffening, of the type comprising a non woven textile layer, a weft, a knitted thread providing the link between the weft and the layer of non woven textile, together with a layer of heat fusible adhesive. In accordance with the invention, the weft comprises threads which have been subjected to considerable contraction subsequent to their association with the non woven textile layer.

The invention also concerns a method of producing a heat fusible textile for stiffening, of the type where a layer of non woven textile is produced and, on a "RASHEL" type loom, this layer is linked with a weft using a knitting thread, the textile obtained then being finished and a coating layer of heat fusible adhesive is deposited. In accordance with the invention, during the finishing stage, the weft is subject to considerable contraction.

The invention will be described in more detail by referring to the Figures, in which :

- Figure 1 represents a schematic view of the heat fusible textile in accordance with the invention, viewed from above
- Figure 2 represents a schematic view of the heat fusible textile in accordance with the invention, viewed in cross section

- Figure 3 represents a schematic view showing the manufacture of the base textile on a "RASCHEL" type loom.

The heat fusible textile 1 for stiffening comprises a non woven textile layer 2.

This layer 2 is basically intended to provide the heat fusible textile with considerable volume relative to its weight. It is produced from a slightly compact layer of fibres and, if necessary, is subject to a minimum bonding weave in order to provide the fibres with just sufficient cohesion in order to avoid the surface fibres being picked up by the knitting mechanism before its association with the weft 3.

This layer of slightly bonded and therefore not very resistant fibres will be transported without tension up to the knitting frame.

This bonding stage may be carried out by hot calendering. In this case, the fibres of this non woven textile layer 2 preferably comprise a two part polyamide, one of these being capable of fusion in order to ensure the calendered bond.

This layer of non woven textile 2 may also be achieved by using synthetic fibres, for example, made from polyester or polyamide, or even using natural and artificial fibres (for example : VISCOSE). A slight bonding of this non woven layer may be achieved by means of a tufting stage.

The heat fusible textile for stiffening comprises a weft 3 formed of threads 6. This weft 3 is preferably a straight weft.

A knitted thread 4 provides the bond between the weft 3 and the non woven textile layer 2. It may be of multi filament type.

For this purpose, the layer of non woven textile 2 comprises a foundation which is pierced by the needles during the knitting stage. The knitted fabric is preferably of overstitched type and the weft 3 is preferably inserted during the knitting stage.

In accordance with an important characteristic of the invention, the threads 6 of the weft 3 are capable of considerable contraction during the finishing stage.

This contraction reduces the width of the non woven textile layer, giving a volume which exceeds that which it possessed initially and therefore provides improved relief. This method of associating a non woven layer 2 and a weft 3 capable of contraction permits a heat fusible textile for stiffening to be produced which has controlled flexibility in a direction perpendicular to the weft 3 and has good resilience in the direction of the weft 3, while retaining a level of extension determined by the conditions prevailing during the contraction treatment stage.

Various threads are known which have a high contraction capacity during the finishing stage (high bulk). These threads may be textured polyester or polyamide threads comprising continuous filaments which, at the time of their manufacture and in accordance with a known technique have been provided with a crimping memory.

These threads are temporarily fixed at their maximum length and, when they are subjected to the finishing treatment under the effects of temperature or a suitable water based treatment, they assume a new configuration, this giving the threads incorporated a dimension which is less than their initial dimension. Preferably, the degree of contraction of the weft is at least 15%. It may reach 40%.

Threads comprising fibres capable of contraction (for example : high bulk acrylic) may also be used.

The presence of the weft 3 on one of the faces of the non woven textile layer provides the heat fusible textile in accordance with the invention with asymmetric properties. It has been noted, for preference, when using the heat fusible textile, the weft 3 is positioned in contact with the fabric. In this way, the resilience achieved in this way is increased. For this reason, the weft 3 and the adhesive layer 5 are preferably on the same side of the non woven layer 2.

The contraction of the weft 3 reduces the width of the non woven layer 2 and therefore increases its mean thickness, which has been compressed during the knitting stage and therefore its volume, by imparting to the fibres a crimping effect under the action of the contraction process. Preferably, the contraction of the weft 3 will occur during the finishing stage. However, other methods may be considered in order to produce this contraction effect.

As an example, a heat fusible textile for stiffening, in accordance with the invention, may have a density of 70 g to 100 g per square metre for the production of false shirt fronts or reinforcements for shirt fronts. The layer of heat fusible adhesive is obtained by using, for example, a coating comprising points equivalent to 2 to 17 mesh (number of points for the heat fusible material within a square where the diagonal measures 2.4 cm (one inch)). The heat fusible material comprising the layer of adhesive may be any one of those normally used to ensure the bonding together of reinforcing fabrics on textiles designed to receive them. It may be based on vinyl polymers, polyolefines, polyamides, etc.

These substances may be in the form of a powder or a paste. The normal coating methods may be used. The preferred method is that involving impression coating of the type using the silk screen process.

In accordance with the method described in the invention, a layer of non woven textile 2 is initially produced.

Several methods of producing layers of non woven textiles are known and any one of these may be used to produce the layer of non woven textile for the heat fusible textile in accordance with the invention.

The non woven layer 2 used is slightly compact and has a slight bonding effect.

This bonding may be produced by hot calendering or this layer of non woven textile may be slightly tufted or pre-tufted, for example, with a needle penetration density of 20 per square centimetre.

The non woven layer comprises fibres made from a polyamide, polyester or natural or artificial fibres.

This layer of non woven textile 2 is fed into a "RASCHEL" type loom, known as a "warp knitting machine" for insertion of the weft.

A "RASCHEL" type loom is schematically represented in Figure 3. The weft 3 is deposited on the non woven layer 2. This assembly is slightly compressed between the frame 11 and the guide plate 12. The compound needle 13 co-operates, as is known, with the heddles 14 in order to produce the knitted fabric.

In this way, the layer of non woven textile 2 is pierced by the needles 11 of the loom and are therefore inserted into the knitted fabric and held by it. Also, the loom inserts a weft 3 into the knitted fabric and therefore the surface of the non woven textile layer 2.

Subsequent to this association, the threads of the weft 6 are subject to contraction which reduces their dimension and results in a reduction in the width of the textile produced and therefore the non woven layer 2 and increases its volume.

The textile is then subjected to the normal finishing operations. This contraction stage may be produced during these operations.

A layer of heat fusible adhesive is then deposited on the textile. This coating is preferably a coating in the form of points and is achieved, for example, by using an engraving cylinder of silk screen printing type.

The invention permits the manufacture of a heat fusible textile for stiffening where the volume exceeds that which it would normally possess due to the layer of non woven textile, the resilience being mainly determined by the properties of the threads comprising the weft.

CLAIMS

1. Heat fusible textile (1) for stiffening, of the type comprising :

- a layer of non-woven textile (2)

- a weft (3)

- a knitted thread (4) providing a bond between the weft (3) and the layer of non woven textile (2)

- a layer of heat fusible adhesive (5)

characterised in that the weft (3) comprises threads (6) which have been subjected to considerable contraction subsequent to its association with the textile layer.

2. Textile for stiffening in accordance with claim 1, characterised in that the weft (3) and the layer of adhesive (5) are on the same side of the non-woven layer (2).

3. Textile for stiffening in accordance with any one of claims 1 or 2, characterised in that the degree of contraction of the weft (3) is between 15% and 40%.

4. Textile for stiffening in accordance with any one of claims 1 and 3, characterised in that the threads (6) of the weft (3) are capable of considerable contraction under the effects of heat.

5. Textile for stiffening in accordance with any one of claims 1 to 4, characterised in that the threads (6) of the weft (3) are made from polyester.

6. Textile for stiffening in accordance with any one of claims 1 to 4, characterised in that the threads (6) of the weft (3) are made from polyamide.



7. Textile for stiffening in accordance with any one of claims 1 to 6, characterised in that the threads (6) of the weft (3) comprise threads with a crimping memory.

8. Textile for stiffening in accordance with any one of claims 1 to 7, characterised in that the layer of non-woven textile (2) is slightly compact and is partially bonded by hot calendering before producing the heat fusible textile (1).

9. Textile for stiffening in accordance with claim 8, characterised in that the fibres of the non-woven textile layer (2) comprise a two part polyamide.

10. Textile for stiffening in accordance with any one of claims 1 to 7, characterised in that the non-woven textile layer (2) is slightly tufted.

11. Textile for stiffening in accordance with claim 11, characterised in that the fibres of the non-woven textile layer (2) are made from polyamide.

12. Textile for stiffening in accordance with claim 10, characterised in that the fibres of the non woven textile layer (2) are made from polyester

13. Textile for stiffening in accordance with claim 10, characterised in that the fibres of the non-woven textile layer (2) are made from natural fibres

14. Textile for stiffening in accordance with claim 10, characterised in that the fibres of the non-woven textile layer (2) are made from artificial fibres (for example : viscose).

15. Textile for stiffening in accordance with any one of claims 1 to 14, characterised in that the knitted thread (4) is a multi filament synthetic thread.

16. Method of producing a heat fusible textile (1) for stiffening and of the type in which :



- a layer of non-woven textile is produced
- on a "RASCHEL" type loom, this layer is linked with a weft using a knitting thread
- the textile obtained is finished
- a coating layer of heat fusible adhesive is deposited

characterised in that, during the finishing stage the weft is subjected to considerable contraction.

