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(72) Inventeurs/Inventors:
SOMMER, SEBASTIAN, DE;
BAUMEISTER, MICHAEL, DE

(73) Propriétaire/Owner:
REIFENHAEUSER GMBH & CO. MASCHINENFABRIK, DE

(74) Agent: BORDEN LADNER GERVAIS LLP

(54) Titre : METHODE DE FABRICATION D'UN TEXTILE NON TISSE
(54) Title: METHOD FOR MANUFACTURING A NON-WOVEN FABRIC

(57) Abrégé/Abstract:
A method for manufacturing a non-woven fabric, wherein a layer of non-woven fabric comprising a fibre mixture of at least two different types of fibres is formed. The single non-woven fabric layer is solidified. The solidified single non-woven fabric layer is then subjected to heat treatment subject to the condition that shrinkage of at least one of the types of fibres is activated.

Abstract:

A method for manufacturing a non-woven fabric, wherein a layer of non-woven fabric comprising a fibre mixture of at least two different types of fibres is formed. The single non-woven fabric layer is solidified. The solidified single non-woven fabric layer is then subjected to heat treatment subject to the condition that shrinkage of at least one of the types of fibres is activated.

Method for manufacturing a non-woven fabric

Description:

The invention relates to a method for manufacturing a non-woven fabric, wherein a layer of non-woven fabric comprising a fibre mixture of at least two different types of fibres is formed. The fibres preferably comprise filaments of thermoplastic plastic.

Numerous methods for manufacturing non-woven fabrics are known from practice. If non-woven fabrics having high strength and high stiffness are produced, these non-woven fabrics are generally distinguished by a relatively low thickness. In other words, these non-woven fabrics are only relatively low in volume and thus frequently have an inadequate textile feel. Special process steps for increasing the thickness or the volume, such as needling the non-woven fabric are particularly uneconomical for the light non-woven products typical in the hygiene area.

The invention is based on the technical problem of providing a method of the type specified initially with which the volume or the thickness of a non-woven fabric can be increased in a simple and cheap fashion.

In order to solve this technical problem, the invention teaches a method for manufacturing a non-woven fabric,

wherein a layer of non-woven fabric comprising a fibre mixture of at least two different types of fibres is formed,

wherein the single non-woven fabric layer is solidified

and wherein the solidified single non-woven fabric layer is then subjected to heat treatment subject to the condition that shrinkage of at least one of the types of fibres is activated.

The term "a single non-woven fabric layer" according to one embodiment of the invention means a layer aggregate which is formed of a plurality of identical non-woven fabric layers. Thus, a plurality of identical non-woven fabric layers having identical fibre mixtures and thus identical shrinking properties are formed one on top of the other so that a virtually homogeneous layer aggregate is formed. In this case, it is within the scope of the invention that these identical non-woven fabric layers forming this layer aggregate are produced using a spinning tool and all on the same laying. According to this embodiment, the single non-woven fabric layer, which is then solidified, preferably in a calender, also forms such a layer aggregate.

It is within the scope of the invention that the fibres of the fibre mixture comprise continuous fibres which appropriately consist of thermoplastic plastic. According to a very preferred embodiment of the invention, the single non-woven fabric layer is present in the form of a homogeneous fibre mixture before the solidification. In other words, the at least two types of fibres are homogeneously distributed in the non-woven fabric layer. In this context, homogeneously means that the fibres are distributed substantially homogeneously in the non-woven fabric layer. In this connection it is in any case within the scope of the invention that no different layers or plies are formed with the different types of fibres.

It is furthermore within the scope of the invention that the two types of fibre of the fibre mixture exhibit different shrinkage behaviour during heat treatment. The fibre mixture used according to the invention thus comprises a shrinkable fibre mixture whose different types of fibres shrink at different temperatures.

According to a very preferred embodiment of the invention, the different types of fibres forming the non-woven fabric layer are produced using a single spinning tool. According to this embodiment, a non-woven fabric layer according to the invention is thus suitably produced in a spinning shaft as mixed fibre laying. According to an especially preferred embodiment of the invention, a spinning tool is used within the scope of this embodiment which is normally used to produce bicomponent fibres or multicomponent fibres. In this case, the different components or the different types of fibres emerge from respectively different spinning openings or capillaries of the spinning tool. An approximately equal spinning speed of the different components or the different types of fibres can be ensured by varying the respective hole densities and the throughputs per capillary.

It is furthermore within the scope of the invention that the two types of fibres consist of different plastics. According to a very preferred embodiment of the invention, at least one of the two types of fibres consists of at least one plastic from the group "polyolefin, polyester, polyamide". The two types of fibres can also consist of copolymers of these plastics. According to one embodiment, the first type of fibre consists of a polyolefin and the second type of fibre consists of a polyester. The polyolefin suitably consists of polyethylene or polypropylene. The polyester preferably comprises polyethylene terephthalate (PET) or polybutylene terephthalate (PBT). According to one embodiment of the invention one type of fibre of the fibre mixture consists of polypropylene and the second type of fibre of the fibre mixture consists of polyethylene terephthalate (PET). Another embodiment of the invention is characterised in that one type of fibre of the fibre mixture consists of polypropylene and that the second type of fibre consists of polybutylene terephthalate (PBT). According to another embodiment of the invention, the first type of fibre of the fibre mixture consists of polyethylene and the second type of fibre of the fibre mixture consists of polypropylene.

The fibres used for the fibre mixture preferably comprise monofilaments. However, it is fundamentally also within the scope of the invention that one type of fibre of the fibre mixture consists of multi-component fibres or multi-component filaments and especially of bicomponent fibres or bicomponent filaments. However, the use of monofilaments for the two or for all types of fibres of the fibre mixtures is preferred.

It is within the scope of the invention that the two types of fibres of the fibre mixture exhibit different shrinkage behaviour during the heat treatment. As a result of a special choice of the raw material for the fibres and/or by adjusting the spinning conditions, the different fibre components have different shrinkage potentials in a certain temperature range.

According to a very preferred embodiment which acquires quite particular importance within the scope of the invention, the single non-woven fabric layer is solidified using a calender. In this case, it is within the scope of the invention that a calender roller or a pair of calender rollers is used for solidification. Preferably a calender roller or a pair of calender rollers is used, which has engraving points with average engraving-point distances over 1.5 mm, preferably over 2.5 mm. According to a preferred embodiment these are average engraving-point distances.

According to a preferred embodiment of the invention the heat treatment of the solidified non-woven fabric layer is carried out using a warmed or heated fluid. The heat treatment is suitably carried out using hot air. In this respect, the heat treatment can be carried out in a hot-air furnace. For example, a drum drier can be used.

The different shrinkage of the two types of fibres is used during the heat treatment. In this case, the fibre component with the higher shrinkage draws the engraving points or connecting points together whereas the fibre components with the lower shrinkage must as it were change in thickness.

The invention is based on the knowledge that voluminous non-woven fabric having excellent properties can be produced simply and cheaply by the method according to the invention. Relatively thick and voluminous non-woven fabric with excellent textile feel is produced. It should be emphasised that the method can be carried out relatively cheaply and thus the non-woven fabrics produced are also distinguished by favourable cost.

CLAIMS:

1. A method for manufacturing a non-woven fabric, comprising the steps of forming a layer of non-woven fabric from a fibre mixture of mono-component filaments, whereby the fibre mixture consists of at least two different types of fibres of mono-component filaments and whereby the two types of fibres have different shrinking characteristics when subjected to a heat treatment and whereby the different types of fibres forming the layer of non-woven fabric are produced with a single spinning tool, solidifying the resulting non-woven fabric layer and subjecting the solidified non-woven fabric layer to heat treatment, subject to the condition that shrinkage of at least one of the types of fibres is activated.

2. The method according to claim 1, wherein the two types of fibres consist of different plastics.

3. The method according to claims 1 or 2, wherein at least one of the two types of fibres includes a polyolefin, a polyester, a polyamide or a combination thereof.

4. The method according to any one of claims 1 to 3, wherein the single non-woven fabric layer is solidified using a calender.

5. The method according to claim 4, wherein a calender roller or a pair of calender rollers is used, which has average engraving-point distances over 1.5 mm.

6. The method according to claim 5, wherein a calender roller or a pair of calender rollers is used, which has average engraving point distances over 2.5 mm.

7. The method according to any one of claims 1 to 6, wherein the heat treatment is carried out using at least one heated fluid.

8. The method according to claim 7, wherein the heated fluid comprises hot air.