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(54) Carpet underfelt

(57) A method of treating an underfelt comprising felted thermoplastic fibres which comprises heating at least one surface of the felt sufficiently to soften the fibres, and then passing the felt through polished calender rollers whereby to callender and quench the softened thermoplastic surface of the felt to give a glazed finish. Preferably, the rollers are polished stainless steel rollers, which conveniently may be water cooled to give the best effect. Advantageously, to give optimum heat transfer, the felt is passed around about 90° of the surface of the roller The nip of the rollers is used to give control over the initial pressure and final thickness of the felt, whereas the increased angle of wrap increases the heat transfer and quenching and thus the glazing effect on the softened thermoplastic fibre surface. The underfelts treated in accordance with the invention are particularly useful in two distinct areas. Firstly, if the surface is lightly glazed, achieved by modest application of heat before callendering, the felt, when in place on the floor, allows a carpet to move more easily when being fitted In a second application, where more heat and pressure is applied, the surface can be callendered further until it is highly glazed and is almost impervious. This enables the finished carpet underlay to be stuck to the floor and for the carpet to be stuck to the underlay.

EP 1 091 036 A2

Description

[0001] This invention relates to a carpet underfelt and in particular to a method of treating carpet underfelts.

[0002] Carpet underlays or underfelts can be made from a mixture of fibres which includes thermoplastic, e g. polypropylene, fibres. In production the fibres are first formed into a felt. The felt may be finished by treating with latex. Additional bonding of the fibres may be obtained by thermal bonding of some of the fibres in the felt. Such underfelts can be used in both domestic and commercial carpeting situations.

[0003] We have now found that when an additional processing step is applied to an underfelt of the type described, additional benefits can be obtained as described more fully hereinafter

[0004] According to the present invention there is provided a method of treating an underfelt comprising felted thermoplastic fibres which comprises heating at least one surface of the felt sufficiently to soften the fibres, and then passing the felt through polished callender rollers whereby to callender and quench the softened thermoplastic surface of the felt to give a glazed finish.

[0005] Preferably, the rollers are polished stainless steel rollers, which conveniently may be water cooled to give the best effect. Advantageously, to give optimum heat transfer, the felt is passed around about 90° of the surface of the roller The nip of the rollers is used to give control over the initial pressure and final thickness of the felt, whereas the increased angle of wrap increases the heat transfer and quenching nad thus the glazing effect on the softened thermoplastic fibre surface.

[0006] Preferably, the softening of the fibres is carried out by heating and we have found that, to give a good surface effect without softening the whole felt, infra red heating is particularly useful.

[0007] The underfelt of the invention may be made of any thermoplastic fibres but polyolefin fibres are preferred, in particular polypropylene fibres. The invention is particularly directed to underlays which have been treated with latex.

[0008] The underfelts treated in accordance with the invention are particularly useful in two distinct areas. Firstly, if the surface is lightly glazed, achieved by modest application of heat before callendering, the felt, when in place on the floor, allows a carpet to move more easily when being fitted. This considerably aids the fitting process and allows the fitters accurately and quickly to fit the carpet on top of the lightly glazed underfelt of the invention.

[0009] In a second application, where more heat and pressure is applied, the surface can be callendered further until it is highly glazed and is almost impervious. This enables the finished carpet underlay to be stuck to the floor and for the carpet to be stuck to the underlay. This already established technique is called "double stick down" and is used in commercial carpeting to anchor the carpet and underlay down to avoid rippling on the carpet surface as a result of the carpet spreading over time. The heavier glazing of the underfelt surface allows carpet adhesive to spread on the surface of the underfelt but only to sink in to a relatively small extent into small holes in the surface. This is sufficient to key in to the surface. The glazing keeps the adhesive on the surface and stops excess adhesive seeping in to the underfelt thereby achieving the aim of using just sufficient adhesive without excess and waste.

[0010] Carpet underfelts in the weight range of for example 450-2000 g/m^2 can be treated, in fibre blends containing up to 100% thermoplastic, e.g. polyolefin, fibre, although blends containing from 25-50% are more normally employed for light glazing and 45-100% for heavy glazing. The thermoplastic fibres can be homogeneously blended with the remaining fibres throughout the felt, or the thermoplastic fibres may be concentrated on the surface for maximum effect When the felt is up to temperature, e g. of 120°C at the end of a dryer, line speeds of 3-7 m/min can be achieved and even exceeded as the incremental amount of heat required to lift the surface temperature of the fibres to the thermoplastic softening point is reduced. This is preferable to using a surface heater on room temperature material, where difficulty might be experienced in bringing the fabric surface up to softening point without localised scorching.

[0011] The invention further includes an underfelt having a glazed surface made in accordance with the above.

[0012] The invention will be described further, by way of example with reference to the accompanying drawing in which the sole figure is a diagrammatic elevational view of an apparatus suitable for carrying out the method of the invention.

[0013] Referring to the drawing, an underfelt 10 is heated on one surface by means of an infra red heater 12 and thereafter passed to the nip 14 of a pair of polished steel rollers 16, 18. The roller 18 is cooled, and the path of the felt 10 is arranged to contact the roller 18 around approximately a quarter (90°) of its surface to improve cooling/quenching. The nip 14 is adjusted to give the required pressure for the desired final thickness of felt.

[0014] The invention will be illustrated further in the following Examples.

EXAMPLE 1

[0015] A latex impregnated underfelt of weight 800g/m^2 has a top surface containing 35% polypropylene fibres. It is treated to heat and quenching in accordance with the invention, and this results in a 10 mm thick felt with a lightly glazed top surface. The felt is suitable for use in the first application above.

EXAMPLE 2

[0016] A latex impregnated felt of weight 1135 g/m^2 has a top surface containing 65% polypropylene fibre blend It is treated to heat and quenching in accordance with the invention, and this results in a 7 mm thick felt with a heavily glazed top surface The felt is suitable for use in the second application above.

[0017] The invention provides an underfelt improved in the above mentioned respects compared with conventional underfelts by means of a simple and inexpensive process.

Claims

1. A method of treating an underfelt comprising felted thermoplastic fibres which comprises heating at least one surface of the felt sufficiently to soften the fibres, and then passing the felt through polished callender rollers whereby to callender and quench the softened thermoplastic surface of the felt to give a glazed finish.

2. A method as claimed in claim 1 wherein the rollers are polished stainless steel rollers.

3. A method as claimed in claim 2 wherein at least one roller is water cooled.

4. A method as claimed in any of claims 1 to 3 in which the felt is passed around about 90° of the surface of the roller.

5. A method as claimed in any of claims 1 to 4 in which the heating is carried out with infra red.

6. A method as claimed in any of claims wherein the underfelt is made of polyolefin fibres.

7. A method as claimed in claim 6 wherein the fibres are polypropylene fibres.

8. A method as claimed in any of claims 1 to 7 wherein the underlay has been treated with latex

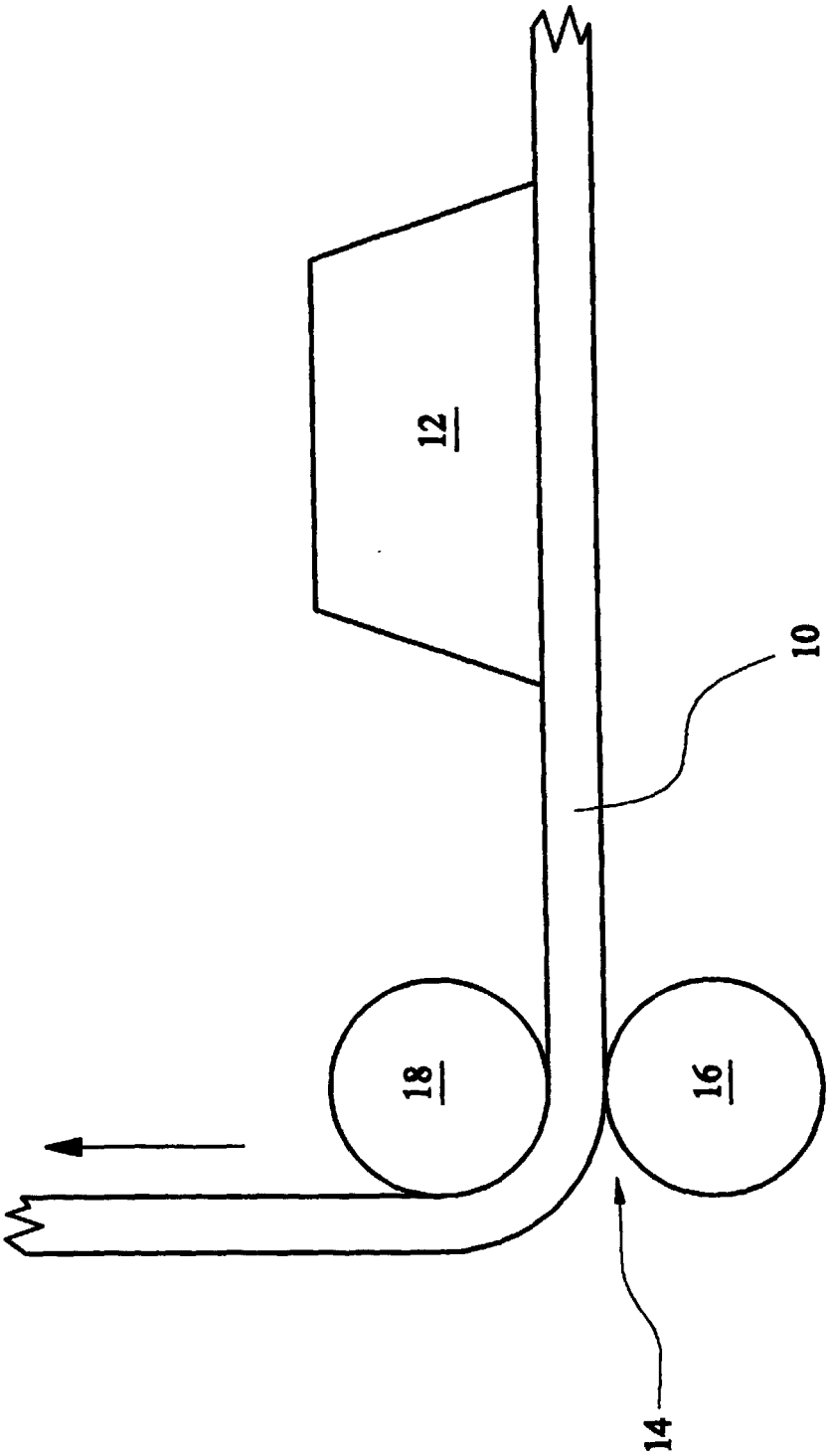
9. A method as claimed in any of claims 1 to 8 wherein the underfelt is in the weight range of 450-2000 g/m^2

10. A method as claimed in any of claims 1 to 9 wherein the surface to be treated comprises a blend containing from 25-50% thermoplastic fibre.

11. A method as claimed in any of claims 1 to 9 wherein the surface to be treated comprises a blend containing from 45-100% thermoplastic fibre.

12. A method as claimed in any of claims 1 to 11 wherein the surface of the felt is heated to the softening point of the thermoplastic fibres

13. An underfelt having a glazed surface made in accordance with any of claims 1 to 12.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