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(54) **DOUBLE-SIDED WATER-ABSORBING FABRIC, AND MANUFACTURING METHOD AND APPLICATION THEREOF**

(57) The present disclosure relates to a double-sided absorbent fabric, and for example, relates to a double-napped high-absorbent fabric. The fabric includes warps and wefts, the warps adopt draw texturing yarns

of 50 deniers to 150 deniers, and the wefts adopt polyester and nylon composite superfine fibers of 75 deniers to 200 deniers

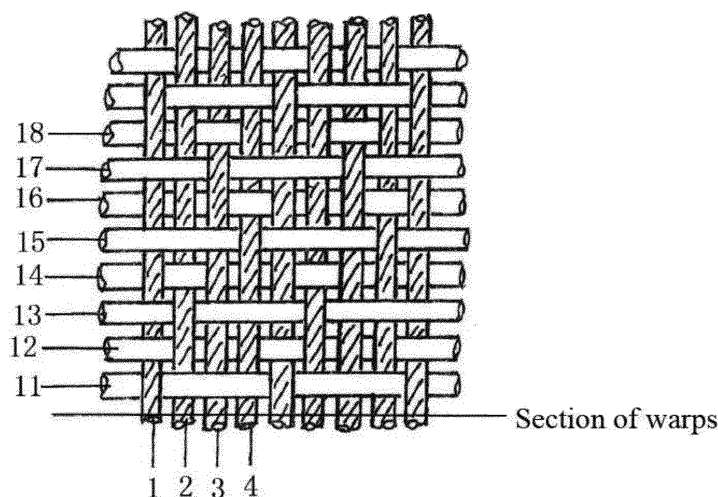


FIG. 1

Description**TECHNICAL FIELD**

5 [0001] The present disclosure relates to a textile field, and for example, relates to a double-sided absorbent fabric, and a preparation method and an application thereof.

BACKGROUND

10 [0002] Absorbent fabric refers to fabric capable of absorbing water, which is woven by fibrous raw materials with absorbent function and has functions of wiping and bathing. The absorbent fabric is mainly used for the fields of indoor bath towels, bathrobes, bathing suits, sport towels, children clothes and the like. Raw materials adopted currently are mainly classified into two categories: the first category is obtained by looping treatment of a knitting machine by means of natural hydrophilic property of fabric fibers such as cotton, linen and the like, so as to produce an appearance with a pile of loops, and the processing field is knitting industry; and the second category is to increase an absorbent area using chemical fibers with specially-shaped cross section to enhance absorbent performance, and the processing fields are the knitting industry and tatting industry.

15 [0003] The absorbent fabric obtained by the above two categories of raw materials has a certain absorbent effect, but has apparent defects. The fabric of plant fibers has good absorbent effect, but has problems of easy color fading, non-resistance to washing, easy abrasion, poor dimensional stability and the like, thereby increasing use cost and reducing quality, while the chemical fibers with specially-shaped cross section have a certain absorbent effect, but are not combined with water through a hydrophilic group of the fibers, and a contact area with water molecules is increased through a specially-shaped cross section structure (non-circular structure) of the chemical fibers with specially-shaped cross section so as to achieve the absorbent effect. The contact area increased like this is limited, and absorbent quantity and absorbent rate are much inferior to the natural hydrophilic property of the plant fibers. Moreover, in the field of tatted fabric, most chemical fibers are interwoven in a cluster form into a single-sided absorbent structure which is bad in the absorbent effect. Meanwhile, to enhance the absorbent effect, the fabric processed in this manner can be compensated only by adding a hydrophilic agent to the fabric during post-processing, but this may cause that the absorbent effect cannot be sustained during use. In addition, since the added hydrophilic agent is a chemical, the hydrophilic agent injures skin of people.

20 [0004] Therefore, the problem to be solved currently is how to effectively enhance the water absorption of the fabric and avoid adding chemical additives that adversely affect people and the environment in production and processing.

SUMMARY

35 [0005] Based on existing problems, the present disclosure provides a double-sided absorbent fabric, and for example, relates to a double-napped high-absorbent fabric. The double-sided absorbent fabric has high water absorption, brings a comfortable and soft touch feel and can be widely applied to the fields of children clothes, household bath textiles, wiping and maintaining of high precision instrument and equipment and the like.

40 [0006] The present disclosure adopts the following technical solution:

In a first aspect, the present disclosure provides a double-sided absorbent fabric which includes warps and wefts.

[0007] The warps adopt draw texturing yarns of 50D to 150D, and the wefts adopt polyester and nylon composite superfine fibers of 75D to 200D.

45 [0008] In the present disclosure, the warps adopted are draw texturing yarns, and the wefts are polyester and nylon composite superfine fibers. A combination of the draw texturing yarns and the polyester and nylon composite superfine fibers has a synergistic effect; the fabric not only has strong absorbent property, ensures that absorbent quantity is greater than 4 g/unit weight and controls an absorbent rate to be less than 18 s/unit area, but also has excellent tensile resistance and comfortable and soft touch feel, ensures that external tensile strength of thin fabric is greater than 250N (newton, N for short)/ external tensile strength of thick fabric is greater than 350N, and greatly enhances a use effect.

50 [0009] In selection of warp materials, the draw texturing yarns are adopted in the present disclosure. The draw texturing yarns can ensure that the fabric has strong tensile resistance, and are used as a surface absorbent material to resist tension of external force and a material to keep a smooth appearance of the fabric. In selection of weft materials, the polyester and nylon composite superfine fibers formed by thousands of monofilaments are adopted in the present disclosure. The average fineness of the monofilaments is about 0.15 dtex (decitex, and dtex for short). Therefore, a floating length can be increased to the maximum extent. After the monofilaments are pulled and broken in such a manner that a front side is napped and raised once and a rear side is napped and raised once, the front side and the rear side of the fabric present countless fine nap. At this moment, liquid can be quickly introduced into the inside of the fabric and another side of the fabric through the nap in a mode of siphoning, and aqueous liquid is absorbed to a largest degree,

so that the fabric realizes high water absorption.

[0010] In the present disclosure, a weaving structure of the double-sided absorbent fabric can adopt the following two modes: a double-sided four-heddle diversified twill structure or a double-sided five-heddle satin structure.

[0011] The double-sided four-heddle diversified twill structure may be: the warps include warp I, warp II, warp III and warp IV successively from a first side to a second side, and the wefts include weft I, weft II, weft III, weft IV, weft V, weft VI, weft VII and weft VIII from a third side to a fourth side.

[0012] The weft I passes by a lower side of the warp I, and is manifested on the upper sides of the warp II, the warp III and the warp IV.

[0013] The weft II is manifested on an upper side of the warp I, and passes by the lower sides of the warp II, the warp III and the warp IV.

[0014] The weft III is manifested on the upper sides of the warp I, the warp III and the warp IV, and passes by the lower side of the warp II.

[0015] The weft IV passes by the lower sides of the warp I, the warp III and the warp IV, and is manifested on the upper side of the warp II.

[0016] The weft V is manifested on the upper sides of the warp I, the warp II and the warp III, and passes by the lower side of the warp IV;

[0017] The weft VI passes by the lower sides of the warp I, the warp II and the warp III, and is manifested on the upper side of the warp IV.

[0018] The weft VII is manifested on the upper parts of the warp I, the warp II and the warp IV, and passes by the lower side of the warp III.

[0019] The weft VIII passes by the lower sides of the warp I, the warp II and the warp IV, and is manifested on the upper side of the warp III.

[0020] The double-sided five-heddle satin structure may be: the warps include warp I, warp II, warp III, warp IV and warp V successively from a first side to a second side, and the wefts successively include weft I, weft II, weft III, weft IV, weft V, weft VI, weft VII, weft VIII, weft IX and weft X from a third side to a fourth side.

[0021] the weft I passes by a lower side of the warp I, and is manifested on upper sides of the warp II, the warp III, the warp IV and the warp V; the weft II is manifested on an upper side of the warp I, and passes by lower sides of the warp II, the warp III, the warp IV and the warp V; the weft III is manifested on the upper sides of the warp I, the warp II, the warp III and the warp V, and passes by the lower side of the warp IV; the weft IV passes by the lower sides of the warp I, the warp II, the warp III and the warp V, and is manifested on the upper side of the warp IV; the weft V is manifested on the upper sides of the warp I, the warp III, the warp IV and the warp V, and passes by the lower side of the warp I; the weft VI passes by the lower sides of the warp I, the warp III, the warp IV and the warp V, and is manifested on the upper side of the warp II; the weft VII is manifested on the upper sides of the warp I, the warp II, the warp III and the warp IV, and passes by the lower side of the warp V; the weft VIII passes by the lower sides of the warp I, the warp II, the warp III and the warp IV, and is manifested on the upper side of the warp V; the weft IX is manifested on the upper sides of the warp I, the warp II, the warp IV and the warp V, and passes by the lower side of the warp III; and the weft X passes by the lower sides of the warp I, the warp II, the warp IV and the warp V, and is manifested on the upper side of the warp III.

[0022] The double-sided four-heddle diversified twill structure and the double-sided five-heddle satin structure are adopted in the present disclosure, so that the floating lengths of the warps and the wefts are controlled in a more reasonable range, and a ratio of interlacing points to non-interlacing points of the warps and the wefts is controlled in 20-25:75-80, such as 20:80, 21:79, 22:78, 23:77, or 25:75 and the like. Namely, 75% to 80% of region of a fabric surface is covered by the polyester and nylon composite superfine fibers. In this way, tightness of the fabric is ensured while the fabric satisfies a high absorbent effect. Compared with the double-sided five-heddle diversified twill structure or the double-sided six-heddle satin structure, a size of the whole fabric when used to make ready-made clothes or wipe products can be more stable and simultaneously, the tensile resistance of the whole fabric is stronger.

[0023] The advantages of the fabric of the present disclosure which adopts the diversified twill structures or the satin structures are as the following 1) to 3).

1) Porosity: the diversified twill structures or the satin structures with a certain floating length of wefts are adopted so that the interlacing points of the fabric are greatly reduced, which is beneficial to penetration of liquid water molecules while ensuring the tightness of the fabric.

2) Easy raising: since the polyester and nylon composite superfine fiber raw materials formed by a plurality of monofilaments are adopted as the wefts, the floating length of the wefts on each side greatly influences the difficulty of mechanical raising during raising. The longer the floating length is, the easier the raising metal steel needle is to pull and snap fibers and the easier the monofilaments in the fibers are to sufficiently expose; and thus, the fibers produce more quill-coverts which are distributed more densely on the surface of the fabric. In this way, the liquid water molecules sufficiently contact more superfine fiber monofilaments and produce a siphoning phenomenon, so

as to achieve a high absorbent effect of the fabric.

3) Easy generation of soft touch feel: the double-sided diversified twill structures or satin structures are adopted, and the ratio of the interlacing points to the non-interlacing points of the warps and the wefts is 20-25:75-80. Generally, 75% to 80% of the fabric surface is covered by the superfine fibers. After post-processing of raising for covering, the fabric surface is completely covered by absorbent wools of the polyester and nylon composite superfine fibers, thereby ensuring that the fabric sufficiently absorbs the liquid water molecules and gets a comfortable and soft touch feel, and also achieving perfect combination of functionality and comfort.

[0024] The double-sided four-heddle diversified twill structure adopted in the present disclosure has two absorbent sides. The grain (also called as structure) of each side is identical, and four-heddle broken twills are adopted. So-called "broken" means unconventional 3/1 twill structure. An oblique direction of the 3/1 twill structure is reversed in the middle, to prevent the grain from having a direction. The produced wools are more uniform, and four warps and eight wefts form a cyclic structure.

[0025] The double-sided five-heddle satin structure adopted in the present disclosure also has two absorbent sides. The grain (also called as structure) of each side is also identical, and five-heddle satins are adopted. Five warps and ten wefts form a cyclic structure.

[0026] In the above two structures, the double-sided twill structures are relatively stiff and smooth, while the double-sided satin structures are relatively soft, thereby satisfying the needs of the fields of children clothes, household bath textiles and wiping and maintaining of high precision instrument and equipment.

[0027] In the present disclosure, the warps in the double-sided absorbent fabric adopt the draw texturing yarns of 50 D (deniers) to 150D, such as 50D, 60D, 70D, 75D, 80D, 90D, 100D, 120D, 150D or the like; and the wefts adopt the polyester and nylon composite superfine fibers of 75D to 200D, such as 75D, 85D, 90D, 100D, 120D, 130D, 150D, 180D, 200D or the like.

[0028] In a second aspect, the present disclosure further provides a preparation method of the double-sided absorbent fabric in the first aspect. The method includes raw material selection, warping, weaving, inspecting, refining, drying, first napping and raising, splitting, washing, presetting, dyeing, setting, second raising, brushing and shearing, setting, and inspecting and packing.

[0029] In the preparation method of the double-sided absorbent fabric in the present disclosure, a processing can be approximately divided into two processes: grey cloth processing and post-processing of raising and dyeing.

[0030] A flow of the grey cloth processing includes: raw material inspection, warping, sizing, beaming, weaving, weaving on the beam, doffing, inspecting and warehousing, and also includes raw material selection and grey cloth weaving. The raw materials include the warps of the draw texturing yarns and the wefts of the polyester and nylon composite superfine fibers. Operations of grey cloth weaving may be performed by a shuttle loom. Firstly, the warps (draw texturing yarns) are sized for the purpose of enhancing cohesiveness and wear resistance of the yarns, thereby ensuring production efficiency in a process of mechanical weaving. A twill structural design or a satin structural design is adopted in grey cloth, so that the floating length of the wefts of the fabric satisfies the needs of plumpness and porosity for double-sided napping. It should be noted that the density of the warps and the wefts shall be designed to achieve fabric density required for tension of external force. Meanwhile, the higher the density of the wefts is, the stronger the absorbent effect is.

[0031] A flow of a processing course of post-processing of raising and dyeing includes: grey cloth, refining, drying, first napping and raising, splitting, washing, presetting, dyeing, setting, second raising, brushing and shearing, setting, inspecting and packing, where refining includes: desizing; drying includes: preshrinking; reducing includes: splitting; presetting includes: fixing a width of a semi-finished product; dyeing includes: conducting dyeing processing in a cylinder according to color requirements; setting includes: preparation for second napping; setting includes: finally fixing a width of a finished product; and brushing and shearing include: sorting the wools on the fabric surface.

[0032] In the preparation method of the double-sided absorbent fabric, the most important operations are two times of napping and raising processing, where the first napping and raising is to nap 8 to 10 times at a front side and a rear side of the fabric respectively, such as 8 times, 9 times or 10 times, and a wool height is 1.5 to 2.0 cm (centimeter), such as 1.5 cm, 1.6 cm, 1.7 cm, 1.8 cm, 1.9 cm or 2.0 cm; and the second raising is to nap 1 to 2 times at a front side and a rear side of the fabric respectively, and a wool height is 1.0 to 1.5 cm, such as 1.0 cm, 1.1 cm, 1.2 cm, 1.3 cm, 1.4 cm or 1.5 cm.

[0033] Through adoption of the above two napping and raising operations, the polyester and nylon composite superfine fibers can be dispersed into thousands of monofilaments (about 0.15 dtex/piece) to stand on the fabric surface; and the liquid water molecules are absorbed through a siphoning principle, thereby greatly increasing absorbent quantity and absorbent rate. Absorbent quantity and absorbent rate may be as follows.

1) The absorbent quantity is greater than 4 g/unit weight (4 g of fabric); and the absorbent quantity means the absorbent quantity when no water drops after the superfine fibers are immersed into water and taken out of the water.

2) The absorbent rate is less than 18 s/unit area (10 cm× 10 cm); and the absorbent rate means elapsed time when

the fabric is completely immersed into the water.

[0034] Optionally, the warping includes: warping using a batch warping machine, hanging a warp cylinder winded with yarns to a warping carrier, and unwinding the yarns from the warp cylinder to a warp beam. The warping speed and the warping tension are adjusted according to specifications of the yarns.

[0035] Optionally, the warping speed is controlled in 800 to 1000 m/min, such as 800 m/min, 820 m/min, 850 m/min, 900 m/min, 950 m/min or 1000 m/min; and the warping tension is controlled in 0.08 to 0.1 g/D (g/denier), such as 0.08 g/D, 0.09 g/D or 0.1 g/D. A warping batch number is set according to the total number of the warps of the warp beams; and then a warp beam required for weaving is finally processed.

[0036] Optionally, the refining includes: desizing, degreasing and preshrinking the woven grey cloth on a refiner.

[0037] Optionally, refining liquid used in refining has an alkali content of 2 g/l; a refining temperature is 95 to 98 , such as 95 , 95.5 , 96 , 96.5 , 97 or 98 ; and a speed is controlled at 45 m/min.

[0038] Optionally, the splitting includes: performing splitting and reducing erosion on the wefts with alkali liquor.

[0039] Optionally, a concentration of the alkali liquor is controlled in 0.15 to 0.2 l/m, such as 0.15 l/m, 0.16 l/m, 0.17 l/m, 0.18 l/m, 0.19 l/m or 0.2 l/m, and a temperature of the alkali liquor is controlled in 90 to 100 , such as 90 , 92 , 95 , 96 , 97 , 98 or 100 .

[0040] Optionally, the setting includes: performing high temperature drying and setting on the dyed fabric.

[0041] Optionally, a setting temperature is controlled in 130 to 150 , such as 130 , 135 , 140 , 145 or 150 ; and the machine speed is controlled at 20 m/min.

[0042] In addition, no hydrophilic additives and no chemical additives are added in the method of the present disclosure, thereby not only ensuring high absorbent rate of the fabric, but also making consumers safer and healthier in a use process, realizing environmental protection, reducing a water treatment link of waste liquid of the hydrophilic additive, decreasing processing cost and energy consumption and also avoiding reducing water absorption and moisture permeation effects of washed fabric.

[0043] In a third aspect, the present disclosure further provides an application of the double-sided absorbent fabric in the first aspect, including: applying the double-sided absorbent fabric to children clothes, household bath textiles and fabrics for wiping and maintaining of high precision instrument and equipment.

(1) The warps adopted in the present disclosure are draw texturing yarns, and the wefts are polyester and nylon composite superfine fibers. A combination of the draw texturing yarns and the polyester and nylon composite superfine fibers has a synergistic effect. The fabric not only has strong absorbent property, ensures that absorbent quantity is greater than 4 g/unit weight and controls an absorbent rate to be less than 18 s/unit area, but also has excellent tensile resistance and comfortable and soft touch feel, ensures that external tensile strength is greater than 250N/350N (thin/thick), and greatly enhances a use effect. Thermal stability of the fabric is -3% to 3%.

(2) Through the method of raising the fabric surface in the present disclosure, an absorbent mode of the surface of woven fabric is improved. The existing mode that only chemical fibers with specially-shaped cross section as absorbent materials are interwoven on a single surface of the fabric to obtain the absorbent effect is creatively changed to the present mode that the polyester and nylon composite superfine fibers are dispersed into thousands of monofilaments (about 0.15 dtex/piece) to stand on the fabric surface, in which the liquid water molecules are absorbed through a siphoning principle, thereby greatly increasing absorbent quantity and absorbent rate.

(3) In the present disclosure, through double-sided absorbent mode, according to different needs (relative stiff and smooth or soft) of the consumers for the hand feel of the fabric, two different interweaving structures are adopted, so that when the polyester and nylon composite superfine fibers are interwoven on two surfaces of the fabric, the ratio (75% to 80%) that the material is floated on the surfaces is sufficiently increased; and through characteristics of fewer interlacing points and porous fabric, a large amount of water molecules can be absorbed into the inside of the fabric more easily and conducted to another side of the fabric.

(4) Compared with the existing mode that the chemical fibers with specially-shaped cross section in the woven absorbent fabric absorb the water molecules in a form of a cluster, in the present disclosure the polyester and nylon composite superfine fibers floated on the fabric surface are subjected to post-processing of splitting, so that fiber bundles are dispersed into thousands of superfine monofilaments and broken with external force to generate a porous structure like blood capillary; and thus effects of more absorbent quantity, higher absorbent rate and larger conduction area than those of a traditional absorbent fabric are obtained through the siphoning principle.

(5) No hydrophilic additives and no chemical additives are added in the preparation method of the present disclosure. The preparation method not only ensures high absorbent rate of the fabric, but also makes the consumers safer and healthier in a use process, realizes environmental protection, reduces a water treatment link of waste liquid of the hydrophilic additive, decreases processing cost and energy consumption, and also avoids reducing water absorption and moisture permeation effects of the fabric after being washed.

BRIEF DESCRIPTION OF DRAWINGS

[0044]

FIG. 1 is a schematic diagram illustrating a front side of a double-sided four-heddle diversified twill structure in embodiment 1;
 FIG. 2 is a schematic diagram illustrating a side surface of a double-sided four-heddle diversified twill structure in embodiment 1;
 FIG. 3 is a schematic diagram illustrating a front side of a double-sided five-heddle satin structure in embodiment 2; and
 FIG. 4 is a schematic diagram illustrating a side surface of a double-sided five-heddle satin structure in embodiment 2.

[0045] In the figures, 1-warp I; 2-warp II; 3-warp III; 4-warp IV; 5-warp I; 6-warp II; 7-warp III; 8-warp IV; 9-warp V; 11-weft I; 12-weft II; 13-weft III; 14-weft IV; 15-weft V; 16-weft VI; 17-weft VII; 18-weft VIII; 31-weft I; 32-weft II; 33-weft III; 34-weft IV; 35-weft V; 36-weft VI; 37-weft VII; 38-weft VIII; 39-weft IX; and 40-weft X.

[0046] The present disclosure is described below in detail. Embodiments below are only simple examples of the present disclosure.

DETAILED DESCRIPTION

[0047] The technical solution of the present disclosure will be described below in combination with drawings through embodiments.

[0048] To better illustrate the present disclosure and facilitate the understanding of the technical solution of the present disclosure, typical but non-limiting embodiments of the present disclosure are as follows:

Embodiment 1

[0049] A double-sided absorbent fabric includes warps and wefts, where the warps adopt draw texturing yarns of 75D, and the wefts adopt polyester and nylon composite superfine fibers of 175D.

[0050] As shown in FIG. 1 to FIG.2, the warps include warp I 1, warp II 2, warp III 3 and warp IV 4 from left (a first side) to right (a second side) successively, and the wefts include weft I 11, weft II 12, weft III 13, weft IV 14, weft V 15, weft VI 16, weft VII 17 and weft VIII 18 successively from bottom (a third side) to top (a fourth side); and four warps and eight wefts form a cyclic structure.

[0051] The weft I 11 passes by a lower side of the warp I 1, and is manifested on upper sides of the warp II 2, the warp III 3 and the warp IV 4.

[0052] The weft II 12 is manifested on an upper side of the warp I 1, and passes by lower sides of the warp II 2, the warp III 3 and the warp IV 4.

[0053] The weft III 13 is manifested on the upper sides of the warp I 1, the warp III 3 and the warp IV 4, and passes by the lower side of the warp II 2.

[0054] The weft IV 14 passes by the lower sides of the warp I 1, the warp III 3 and the warp IV 4, and is manifested on the upper side of the warp II 2.

[0055] The weft V 15 is manifested on the upper sides of the warp I 1, the warp II 2 and the warp III 3, and passes by the lower side of the warp IV 4.

[0056] The weft VI 16 passes by the lower sides of the warp I 1, the warp II 2 and the warp III 3, and is manifested on the upper side of the warp IV 4.

[0057] The weft VII 17 is manifested on the upper sides of the warp I 1, the warp II 2 and the warp IV 4, and passes by the lower side of the warp III 3.

[0058] The weft VIII 18 passes by the lower sides of the warp I 1, the warp II 2 and the warp IV 4, and is manifested on the upper side of the warp III 3.

[0059] A preparation method of the double-sided absorbent fabric includes the following steps: raw material selection→warping→weaving→inspecting→refining→drying→first napping and raising→splitting→washing→presetting→dyeing→setting→second raising→brushing and shearing→setting→inspecting and packing.

[0060] Optionally, the method includes the following steps.

[0061] In a step of warping, the warping is performed using a batch warping machine; the warping is a process that a warp cylinder winded with draw texturing yarns of 75D is hung to a warping carrier and that the draw texturing yarns of 75D are unwound from the warp cylinder to a warp beam. The warping speed is controlled at 1000 m/min; the warping tension is controlled at 0.08 g/D; a warping batch number is set according to the total number of the warps of the warp beam; and a warp beam required for weaving is processed.

[0062] In a step of weaving, the warped beam is subjected to drafting, reed-in and warp gating (i.e., putting the warp beam onto the weaving machine) for debugging; a required weft density gear is installed according to process setting; the polyester and nylon composite superfine fibers of 175D are put onto a weft storage shelf; then the weaving machine is debugged for weaving until normal operation; and a machine speed is controlled at about 550 rpm.

[0063] In a step of inspecting, after doffed, grey cloth is inspected and graded for the quality on a platform of a grey cloth inspection machine; the grey cloth is respectively stacked and labeled (marked with article number, length and grade) according to different grades; and inspection requirements are based on the national tatting industrial standard.

[0064] In a step of refining, the refining refers to a process that the woven grey cloth is desized, degreased and preshrunk on a refiner; the process includes: the woven grey cloth is desized, degreased and preshrunk on a refiner; refining liquid has an alkali content of 2 g/l; a refining temperature is 95 ; and a machine speed is controlled at about 45 m/min.

[0065] In a step of drying, the refined semi-finished grey cloth is dried and the wefts are sufficiently preshrunk, in order to make preparations for a next procedure of raising and napping; and a temperature of a drying cylinder is controlled at 125 .

[0066] In a step of first napping and raising, the first napping and raising refers to a process that double sides of the dried grey cloth are respectively napped and raised multiple times; a front side and a rear side are respectively napped 8 times. And a wool height is 1.8 cm; and a speed of a napping machine is controlled at 22 m/min.

[0067] In a step of splitting, the polyester and nylon composite superfine fibers are deeply eroded with alkali liquor to achieve that the fibers at deep layers of wefts are fluffy and easy to break for preparation for second napping; the process includes: a procedure that the wefts are split and alkali deweighting eroded with the alkali liquor of a certain concentration, which is beneficial to a next procedure of raising and napping; a concentration of the alkali liquor is controlled at 0.18 l/m; and a temperature of the alkali liquor is controlled at 90 .

[0068] In a step of washing, the split grey cloth is soaked with corrosive alkali liquor; cleaning and drying operation should be performed on the split grey cloth using clean water in this procedure.

[0069] In a step of presetting, the grey cloth before dyeing is preset according to width requirements of finished products to prevent the width of fabric from being shrunk excessively due to heating and control the width of fabric to be within a reasonable range. The process includes: the dyed fabric is dried and set at high temperature, which is beneficial to a next procedure of second raising and brushing, and shearing; a setting temperature is controlled at 130 ; and the speed is controlled at 20 m/min.

[0070] In a step of dyeing, high-temperature dyeing is performed according to color requirements: dyeing is performed at 130 and the temperature is preserved for 45 minutes.

[0071] In a step of second setting, the dyed, washed and dried colored cloth is dried and controlled for the width of fabric to prepare for second raising; and the process is the same as presetting.

[0072] In a step of second raising, the second raising is to nap a front side and a rear side respectively once, and a wool height is about 1.2 cm.

[0073] In a step of brushing and shearing, after second raising, lengths of the wools of the fabric are different, and wools on each side shall be brushed, straightened out, and sheared orderly to obtain a smooth wool feel and a smooth appearance on the surface of the fabric; and brushing and shearing speed is controlled at 22 m/min.

[0074] In a step of third setting, after the above procedures are completed, the width of fabric may be changed; the final width of fabric shall be fixed and a softening agent shall be added so that a hand feeling of the fabric is better; and the process is the same as presetting.

[0075] In a step of inspecting and packing, the set fabric is graded in an inspection workshop of nine-in-ten products (for example, according to the national tatting industrial standard); and then the fabric is packed and labeled, and warehoused for delivery.

Embodiment 2

[0076] A double-sided absorbent fabric includes warps and wefts, where the warps adopt draw texturing yarns of 100D, and the wefts adopt polyester and nylon composite superfine fibers of 160D.

[0077] As shown in FIG. 3 to FIG. 4, the warps successively include warp I 5, warp II 6, warp III 7, warp IV 8 and warp V 9 from left (a first side) to right (a second side), and the wefts successively include weft I 31, weft II 32, weft III 33, weft IV 34, weft V 35, weft VI 36, weft VII 37, weft VIII 38, weft IX 39 and weft X40 from bottom (a third side) to top (a fourth side); and five warps and ten wefts form a cyclic structure.

[0078] The weft I 31 passes by a lower side of the warp I 5, and is manifested on upper sides of the warp II 6, the warp III 7, the warp IV 8 and the warp V 9; the weft II 32 is manifested on an upper side of the warp I 5, and passes by lower sides of the warp II 6, the warp III 7, the warp IV 8 and the warp V 9; the weft III 33 is manifested on the upper sides of the warp I 5, the warp II 6, the warp III 7 and the warp V 9, and passes by the lower side of the warp IV 8; the weft IV34 passes by the lower sides of the warp I 5, the warp II 6, the warp III 7 and the warp V 9, and is manifested on

the upper side of the warp IV 8; the weft V35 is manifested on the upper sides of the warp I 5, the warp III 7, the warp IV 8 and the warp V 9, and passes by the lower side of the warp II 6; the weft VI 36 passes by the lower sides of the warp I 5, the warp III 7, the warp IV 8 and the warp V 9, and is manifested on the upper side of the warp II 6; the weft VII 37 is manifested on the upper sides of the warp I 5, the warp II 6, the warp III 7 and the warp IV 8, and passes by the lower side of the warp V 9; the weft VIII 38 passes by the lower sides of the warp I 5, the warp II 6, the warp III 7 and the warp IV 8, and is manifested on the upper side of the warp V 9; the weft IX39 is manifested on the upper sides of the warp I 5, the warp II 6, the warp IV 8 and the warp V 9, and passes by the lower side of the warp III 7; and the weft X40 passes by the lower sides of the warp I 5, the warp II 6, the warp IV 8 and the warp V 9, and is manifested on the upper side of the warp III 7.

[0079] A preparation method of the double-sided absorbent fabric includes the following steps:

raw material selection→warping→weaving→inspecting→refining→drying→first napping and raising→splitting→washing→presetting→dyeing→setting→second raising→brushing and shearing→setting→inspecting and packing.

[0080] Optionally, the method includes the following steps.

[0081] In a step of warping, the warping is performed using a batch warping machine; the warping is a process that a warp cylinder winded with draw texturing yarns of 100D is hung to a warping carrier and that the draw texturing yarns of 100D are unwound from the warp cylinder to a warp beam. The warping speed is controlled at 1200 m/min; the warping tension is controlled at 0.09 g/D; a warping batch number is set according to the total number of the warps of the warp beams; and a warp beam required for weaving is processed.

[0082] In a step of weaving, the warped beam is subjected to drafting, reed-in and warp gating by warp gating operators to put the warp beam onto the weaving machine for debugging; a required weft density gear is installed according to process setting; the polyester and nylon composite superfine fibers of 175D are put onto a weft storage shelf; then the weaving machine is debugged for weaving until normal operation; and a machine speed is controlled at about 550 rpm.

[0083] In a step of inspecting, after doffed, grey cloth is inspected and graded for the quality on a platform of a grey cloth inspection machine; the grey cloth is respectively stacked and labeled (marked with article number, length and grade) according to different grades; and inspection requirements are based on the national tatting industrial standard.

[0084] In a step of refining, the refining refers to a process that the woven grey cloth is desized, degreased and preshrunk on a refiner; the process includes: the woven grey cloth is desized, degreased and preshrunk on a refiner; refining liquid has an alkali content of 2 g/l; a refining temperature is 98 ; and a machine speed is controlled at about 45 m/min.

[0085] In a step of drying, the refined semi-finished grey cloth is dried and the wefts are sufficiently preshrunk, in order to make preparations for a next procedure of raising and napping; and a temperature of a drying cylinder is controlled at 140 .

[0086] In a step of first napping and raising, the first napping and raising refers to a process that double sides of the dried grey cloth are respectively napped and raised multiple times; a front side and a rear side are respectively napped 10 times, and a wool height is 1.5 cm; a speed of a napping machine is controlled at 25 m/min; and the wool height is the length of wool.

[0087] In a step of splitting, the polyester and nylon composite superfine fibers are deeply eroded with alkali liquor to achieve that the fibers at deep layers of wefts are fluffy and easy to break for preparation for second napping; the process includes: a procedure that the wefts are split and reducing eroded with the alkali liquor of a certain concentration, which is beneficial to a next procedure of raising and napping; a concentration of the alkali liquor is controlled at 0.2 l/m; and a temperature of the alkali liquor is controlled at 95 .

[0088] In a step of washing, the split grey cloth is soaked with corrosive alkali liquor; cleaning and drying operation should be performed on the split grey cloth using clean water in this procedure.

[0089] In a step of presetting, the grey cloth before dyeing is preset according to width requirements of finished products to prevent the width of fabric from being shrunk excessively due to heating and control the width of fabric to be within a reasonable range. The process includes: the dyed fabric is dried and set at high temperature, which is beneficial to a next procedure of second raising and brushing, and shearing; a setting temperature is controlled at 140 ; and the speed is controlled at 20 m/min.

[0090] In a step of dyeing, high-temperature dyeing is performed according to color requirements: dyeing is performed at 130 and the temperature is preserved for 50 minutes.

[0091] In a step of second setting, the dyed, washed and dried colored cloth is dried and controlled for the width of fabric to prepare for second raising; and the process is the same as presetting.

[0092] In a step of second raising, the second raising is to nap a front side and a rear side respectively once, and a wool height is about 1.5 cm.

[0093] In a step of brushing and shearing, after second raising, lengths of the wools of the fabric are different, and wools on each side shall be brushed, straightened out, and sheared orderly to obtain a smooth wool feel and a smooth appearance on the surface of the fabric; and brushing and shearing speed is controlled at 20 m/min.

[0094] In a step of third setting, after the above procedures are completed, the width of fabric may be changed; the

final width of fabric shall be fixed and a softening agent shall be added so that a hand feeling of the fabric is better; and the process is the same as presetting.

[0095] In a step of inspecting and packing, the set fabric is graded in an inspection workshop of nine-in-ten products (for example, according to the national tatting industrial standard); and then the fabric is packed and labeled, and warehoused for delivery.

Embodiment 3

[0096] A double-sided absorbent fabric includes warps and wefts, where the warps adopt draw texturing yarns of 50D, and the wefts adopt polyester and nylon composite superfine fibers of 75D. A structure and a preparation method of the double-sided absorbent fabric are the same as those of embodiment 1.

Embodiment 4

[0097] A double-sided absorbent fabric includes warps and wefts, where the warps adopt draw texturing yarns of 120D, and the wefts adopt polyester and nylon composite superfine fibers of 85D. A structure and a preparation method of the double-sided absorbent fabric are the same as those of embodiment 1.

Embodiment 5

[0098] A double-sided absorbent fabric includes warps and wefts, where the warps adopt draw texturing yarns of 60D, and the wefts adopt polyester and nylon composite superfine fibers of 100D. A structure and a preparation method of the double-sided absorbent fabric are the same as those of embodiment 2.

Embodiment 6

[0099] A double-sided absorbent fabric includes warps and wefts, where the warps adopt draw texturing yarns of 125D, and the wefts adopt polyester and nylon composite superfine fibers of 180D. A structure and a preparation method of the double-sided absorbent fabric are the same as those of embodiment 2.

Embodiment 7

[0100] A double-sided absorbent fabric includes warps and wefts, where the warps adopt draw texturing yarns of 65D, and the wefts adopt polyester and nylon composite superfine fibers of 160D. A structure of the double-sided absorbent fabric is the same as that of embodiment 1. The preparation method includes the following steps:

raw material selection→ warping→ weaving→ inspecting→ refining→ drying→ first napping and raising→ splitting→ washing→ presetting→ dyeing→ setting→ second raising→ brushing and shearing→ setting→ inspecting and packing.

[0101] Optionally, the method includes the following steps.

[0102] In a step of warping, the warping is performed using a batch warping machine; the warping is a process that a warp cylinder winded with draw texturing yarns of 65D is hung to a warping carrier and that the draw texturing yarns of 65D are unwound from the warp cylinder to a warp beam. The warping speed is controlled at 900 m/min; the warping tension is controlled at 0.1 g/D; a warping batch number is set according to the total number of the warps of the warp beams; and a warp beam required for weaving is finally processed.

[0103] In a step of weaving, the warped beam is subjected to drafting, reed-in and warp gating by warp gating operators to put the warp beam onto the weaving machine for debugging; a required weft density gear is installed according to process setting; the polyester and nylon composite superfine fibers of 160D are put onto a weft storage shelf; then the weaving machine is debugged for weaving until normal operation; and a machine speed is controlled at about 450 rpm.

[0104] In a step of inspecting, after doffed, grey cloth is inspected and graded for the quality on a platform of a grey cloth inspection machine; the grey cloth is respectively stacked and labeled (marked with article number, length and grade) according to different grades; and inspection requirements are based on the national tatting industrial standard.

[0105] In a step of refining, the refining refers to a process that the woven grey cloth is desized, degreased and preshrunk on a refiner; the process includes: a process that the woven grey cloth is desized, degreased and preshrunk on a refiner; refining liquid has an alkali content of 2 g/l; a refining temperature is 96 ; and a machine speed is controlled at about 45 m/min.

[0106] In a step of drying, the refined semi-finished grey cloth is dried and the wefts are sufficiently preshrunk, in order to make preparations for a next procedure of raising and napping; and a temperature of a drying cylinder is controlled at 140 .

[0107] In a step of first napping and raising, the first napping and raising refers to a process that double sides of the

dried grey cloth are respectively napped and raised multiple times; a front side and a rear side are respectively napped 9 times. And a wool height is 1.5 cm; and a speed of a napping machine is controlled at 22 m/min.

[0108] In a step of splitting, the polyester and nylon composite superfine fibers are deeply eroded with alkali liquor to achieve that the fibers at deep layers of wefts are fluffy and easy to break for preparation for second napping; the process includes: a procedure that the wefts are split and reducing eroded with the alkali liquor of a certain concentration, which is beneficial to a next procedure of raising and napping; a concentration of the alkali liquor is controlled at 0.16 l/m; and a temperature of the alkali liquor is controlled at 100 .

[0109] In a step of washing, the split grey cloth is soaked with corrosive alkali liquor; and cleaning and drying operation should be performed on the split grey cloth using clean water in this procedure.

[0110] In a step of presetting, the grey cloth before dyeing is preset according to width requirements of finished products to prevent the width of fabric from being shrunk excessively due to heating and control the width of fabric to be within a reasonable range. The process includes: the dyed fabric is dried and set at high temperature, which is beneficial to a next procedure of second raising and brushing, and shearing; a setting temperature is controlled at 150 ; and the speed is controlled at 20 m/min.

[0111] In a step of dyeing, high-temperature dyeing is performed according to color requirements: dyeing is performed at 130 and the temperature is preserved for 45 minutes.

[0112] In a step of second setting, the dyed, washed and dried colored cloth is dried and controlled for the width of fabric to prepare for second raising; and the process is the same as presetting.

[0113] In a step of second raising, the second raising is to nap a front side and a rear side respectively once, and a wool height is about 1.5 cm; and a speed of a napping machine is controlled to be less than 15 m/min.

[0114] In a step of brushing and shearing, after second raising, lengths of the wools of the fabric are different, and wool on each side shall be brushed, straightened out, and sheared orderly to obtain a smooth wool feel and a smooth appearance of the wools on the surface of the fabric; and brushing and shearing speed is controlled at 25 m/min.

[0115] In a step of third setting, after the above procedures are completed, the width of fabric may be changed; the final width of fabric shall be fixed and a softening agent shall be added so that a hand feeling of the fabric is better; and the process is the same as presetting.

[0116] In a step of inspecting and packing, the set fabric is graded in an inspection workshop of nine-in-ten products (for example, according to the national tatting industrial standard); and then the fabric is packed and labeled, and warehoused for delivery.

Embodiment 8

[0117] A double-sided absorbent fabric includes warps and wefts, the warps adopt draw texturing yarns of 95D, and the wefts adopt polyester and nylon composite superfine fibers of 195D. A structure of the double-sided absorbent fabric is the same as that of embodiment 2. The preparation method includes the following steps: raw material selection→warping→weaving→inspecting→refining→drying→first napping and raising→splitting→washing→presetting→dyeing→setting→second raising→brushing and shearing→setting→inspecting and packing.

[0118] Optionally, the method includes the following steps.

[0119] In a step of warping, the warping is performed using a batch warping machine; the warping is a process that a warp cylinder winded with draw texturing yarns of 95D is hung on a warping carrier, and that the draw texturing yarns of 95D are unwound from the warp cylinder to a warp beam. The warping speed is controlled at 1100 m/min; the warping tension is controlled at 0.09 g/D; a warping batch number is set according to the total number of the warps of the warp beams; and a warp beam required for weaving is finally processed.

[0120] In a step of weaving, the warped beam is subjected to drafting, reed-in and warp gating by warp gating operators to put the warp beam onto the weaving machine for debugging; a required weft density gear is installed according to process setting; the polyester and nylon composite superfine fibers of 195D are put onto a weft storage shelf; then the weaving machine is debugged for weaving until normal operation; and a machine speed is controlled at about 450 rpm.

[0121] In a step of inspecting, after doffed, grey cloth is inspected and graded for the quality on a platform of a grey cloth inspection machine; the grey cloth is respectively stacked and labeled (marked with article number, length and grade) according to different grades; and inspection requirements are based on the national tatting industrial standard.

[0122] In a step of refining, the refining refers to a process that the woven grey cloth is desized, degreased and preshrunk on a refiner; the process includes: a process that the woven grey cloth is desized, degreased and preshrunk on a refiner; refining liquid has an alkali content of 2 g/l; a refining temperature is 96 ; and a machine speed is controlled at about 45 m/min.

[0123] In a step of drying, the refined semi-finished grey cloth is dried and the wefts are sufficiently preshrunk, in order to make preparations for a next procedure of raising and napping; and a temperature of a drying cylinder is controlled at 130 .

[0124] In a step of first napping and raising, the first napping and raising refers to a process that double sides of the

dried grey cloth are respectively napped and raised multiple times; a front side and a rear side are respectively napped 9 times, and a wool height is 2.0 cm; and a speed of a napping machine is controlled at 22 m/min.

[0125] In a step of splitting, the polyester and nylon composite superfine fibers are deeply eroded with alkali liquor to achieve that the fibers at deep layers of wefts are fluffy and easy to break for preparation for second napping; the process includes: a procedure that the wefts are split and reducing eroded with the alkali liquor of a certain concentration, which is beneficial to a next procedure of raising and napping; a concentration of the alkali liquor is controlled at 0.16 l/m; and a temperature of the alkali liquor is controlled at 98 .

[0126] In a step of washing, the split grey cloth is soaked with corrosive alkali liquor; cleaning and drying operation should be performed on the split grey cloth using clean water in this procedure;

In a step of presetting, the grey cloth before dyeing is preset according to width requirements of finished products to prevent the width of fabric from being shrunk excessively due to heating and control the width of fabric to be within a reasonable range. The process includes: the dyed fabric is dried and set at high temperature, which is beneficial to a next procedure of second raising and brushing, and shearing; a setting temperature is controlled at 145 ; and the speed is controlled at 20 m/min.

[0127] In a step of dyeing, high-temperature dyeing is performed on the grey cloth after being presetted according to color requirements: dyeing is performed at 130 and the temperature is preserved for 45 minutes.

[0128] In a step of second setting, the dyed, washed and dried colored cloth is dried and controlled for the width of fabric to prepare for second raising; and the process is the same as presetting.

[0129] In a step of second raising, the second raising is to nap a front side and a rear side respectively once, and a wool height is about 1.2 cm; and a speed of a napping machine is controlled to be less than 15 m/min;

In a step of brushing and shearing, after second raising, lengths of the wools of the fabric are different, and wool on each side shall be brushed, straightened out, and sheared orderly to obtain a smooth wool feel and a smooth appearance on the surfaces of the fabric; and brushing and shearing speed is controlled at 25 m/min.

[0130] In a step of third setting, after the above procedures are completed, the width of fabric may be changed; the final width of fabric shall be fixed and a softening agent shall be added so that a hand feeling of the fabric is better; and the process is the same as presetting.

[0131] In a step of inspecting and packing, the set fabric is graded in an inspection workshop of nine-in-ten products (for example, according to the national tatting industrial standard); and then the fabric is packed and labeled, and warehoused for delivery.

Reference Example 1

[0132] Compared with embodiment 1, in a preparation process of the double-sided absorbent fabric of this example, the procedure of napping and raising is conducted only once.

Reference Example 2

[0133] Compared with embodiment 1, this example is the same as embodiment 1 except that the wefts are replaced with the polyester and nylon composite triangular specially-shaped fibers of 175D.

Reference Example 3

[0134] Compared with embodiment 1, this example is the same as embodiment 1 except that the warps are replaced with 75D cotton-like polyester absorbent fibers with specially-shaped sections.

Reference Example 4

[0135] Compared with embodiment 1, this example is the same as embodiment 1 except that the double-sided four-heddle diversified twill structure is replaced with a double-sided five-heddle diversified twill structure.

Reference Example 5

[0136] Compared with embodiment 2, this example is the same as embodiment 2 except that the double-sided five-heddle satin structure is replaced with a double-sided six-heddle satin structure.

[0137] The double-sided absorbent fabrics obtained from above embodiments 1-8 and reference examples 1-5 are tested for absorbent quantity and absorbent rate, and results are shown in Table 1 and Table 2, where a method for measuring the absorbent quantity of the fabric is as follows: 4 g of the fabric is put into clean water until the fabric is completely immersed into the water, and after reaching saturated water absorption, the fabric is taken out (until no water

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drips) and weighed to obtain the quantity (g) of the water absorbed; and a method for measuring the absorbent rate is as follows: the square fabric of 10cm×10cm is horizontally put into clean water to obtain the time (second) taken by that the fabric is completely sunk into a water surface.

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Table 1

	Embodiment 1	Embodiment 2	Embodiment 3	Embodiment 4	Embodiment 5	Embodiment 6	Embodiment 7	Embodiment 8
Absorbent quantity, g/unit weight	7	6	5	6	5	6	4	5
Absorbent rate, s/unit area	1.4	1.5	1.5	16	1.8	1.5	16	17
External tensile strength, N	4.20	3.90	2.60	30.0	2.80	4.40	300	43.0

Table 2

	Reference example 1	Reference example 2	Reference example 3	Reference example 4	Reference example 5
Absorbent quantity, g/unit weight	3	4	8	7	6
Absorbent rate, s/unit area	19	20	14	13	14
External tensile strength, N	430	370	330	340	320

[0138] It can be seen from above results that, the absorbent fabrics prepared according to embodiments 1-8 have absorbent quantity greater than or equal to 4 g/unit weight and have absorbent rate controlled to be less than or equal to 18 s/unit area. The external tensile strength of the absorbent fabric may be above 250N/350N (corresponding to a thin version /a thick version respectively). In contrast, the absorbent fabrics prepared according to reference examples 1-5 have comprehensive performances in aspects of the absorbent quantity, the absorbent rate and the external tensile strength apparently lower than those of the absorbent fabrics prepared according to embodiments 1-8.

[0139] In conclusion, the double-sided absorbent fabric prepared in the present disclosure has not only high water absorption, but also an improved appearance and an improved touch feel, and can be widely applied to the fields of children clothes, household bath textiles and wiping and maintaining of high precision instrument and equipment. Moreover, no hydrophilic additives are added in the preparing process, thereby making consumers safer and healthier in a use process, decreasing processing cost and energy consumption and also avoiding reducing water absorption and moisture permeation effects of washed fabric.

[0140] The applicant declares that detailed structural features of the present disclosure are described through above embodiments in the present disclosure, but the present disclosure is not limited to the above detailed structural features, i.e., it does not mean that the present disclosure must be implemented depending on the above detailed structural features. Those skilled in the art shall understand that, improvement of the present disclosure, equivalent replacement of components selected in the present disclosure, addition of auxiliary components, selection of specific manners and the like can also be made.

[0141] The above describes optional embodiments of the present disclosure in detail, but the present disclosure is not limited to specific details in above embodiments and technical solutions of the present disclosure can be subjected to various simple variations.

[0142] It should also be noted that various specific technical features described in above specific embodiments can be combined in any appropriate mode in case of no conflict. To avoid unnecessary repetition, various possible combination modes are not separately illustrated in the present disclosure.

[0143] In addition, various embodiments of the present disclosure can be arbitrarily combined without conflict and shall also be regarded as the disclosed contents of the present disclosure.

INDUSTRIAL APPLICABILITY

[0144] The double-sided absorbent fabric provided in the present disclosure adopts the double-sided twill structure or double-sided satin structure, and is processed by a double-sided raising method, so that not only the fabric has high water absorption, but also the appearance and touch feel of fabric are improved. The double-sided absorbent fabric provided in the present disclosure can be widely applied to the fields of children clothes, household bath textiles and wiping and maintaining of high precision instrument and equipment. Meanwhile, no hydrophilic additives are added in the preparing process, thereby making the consumers safer and healthier in the use process, decreasing the processing cost and the energy consumption and also avoiding reducing water absorption and moisture permeation effects of washed fabric.

Claims

1. A double-sided absorbent fabric, comprising warps and wefts, wherein the warps adopt draw texturing yarns of 50 deniers to 150 deniers, and the wefts adopt polyester and nylon

composite superfine fibers of 75 deniers to 200 deniers.

2. The double-sided absorbent fabric according to claim 1, wherein the warps successively comprise warp I, warp II, warp III and warp IV successively from a first side to a second side, and the wefts comprise weft I, weft II, weft III, weft IV, weft V, weft VI, weft VII and weft VIII successively from a third side to a fourth side;
the weft I passes by a lower side of the warp I, and is manifested on upper sides of the warp II, the warp III and the warp IV;
the weft II is manifested on an upper side of the warp I, and passes by lower sides of the warp II, the warp III and the warp IV;
the weft III is manifested on the upper sides of the warp I, the warp III and the warp IV, and passes by a lower side of the warp II;
the weft IV passes by lower sides of the warp I, the warp III and the warp IV, and is manifested on an upper part of the warp II;
the weft V is manifested on upper sides of the warp I, the warp II and the warp III, and passes by a lower side of the warp IV;
the weft VI passes by lower sides of the warp I, the warp II and the warp III, and is manifested on an upper side of the warp IV;
the weft VII is manifested on upper sides of the warp I, the warp II and the warp IV, and passes by a lower side of the warp III; and
the weft VIII passes lower sides of the warp I, the warp II and the warp IV, and is manifested on an upper side of the warp III.
3. The double-sided absorbent fabric according to claim 1, wherein the warps comprise warp I, warp II, warp III, warp IV and warp V successively from a first side to a second side, and the wefts comprise weft I, weft II, weft III, weft IV, weft V, weft VI, weft VII, weft VIII, weft IX and weft X successively from a third side to a fourth side;
the weft I passes by a lower side of the warp I, and is manifested on upper sides of the warp II, the warp III, the warp IV and the warp V; the weft II is manifested on an upper side of the warp I, and passes by lower sides of the warp II, the warp III, the warp IV and the warp V; the weft III is manifested on upper sides of the warp I, the warp II, the warp III and the warp V, and passes by a lower side of the warp IV; the weft IV passes by the lower sides of the warp I, the warp II, the warp III and the warp V, and is manifested on an upper side of the warp IV; the weft V is manifested on upper sides of the warp I, the warp III, the warp IV and the warp V, and passes by a lower side of the warp II; the weft VI passes by lower sides of the warp I, the warp III, the warp IV and the warp V, and is manifested on an upper side of the warp II; the weft VII is manifested on upper sides of the warp I, the warp II, the warp III and the warp IV, and passes by a lower side of the warp V; the weft VIII passes by lower sides of the warp I, the warp II, the warp III and the warp IV, and is manifested on an upper side of the warp V; the weft IX is manifested on upper sides of the warp I, the warp II, the warp IV and the warp V, and passes by a lower side of the warp III; and the weft X passes by lower sides of the warp I, the warp II, the warp IV and the warp V, and is manifested on the upper side of the warp III.
4. A preparation method of the double-sided absorbent fabric according to any one of claims 1-3, comprising: raw material selection, warping, weaving, inspecting, refining, drying, first napping and raising, splitting, washing, pre-setting, dyeing, setting, second raising, brushing and shearing, setting, and inspecting and packing;
the first napping and raising is to nap 8 to 10 times at a front side and a rear side of the fabric respectively, and a wool height is 1.5 to 2.0 cm; and
the second raising is to nap 1 to 2 times at a front side and a rear side of the fabric respectively, and a wool height is 1.0 to 1.5 cm.
5. The method according to claim 4, wherein the warping is done by a batch warping machine, the warping comprises: hanging a warp cylinder wound with yarns to a warping carrier, and unwinding the yarns from the warp cylinder to a warp beam, wherein a linear speed for warping and a warping tension are adjusted according to specifications of the yarns.
6. The method according to claim 5, wherein the linear speed for warping is controlled in 800 to 1000 m/min; the warping tension is controlled in 0.08 to 0.1 g/denier; a warping batch number is set according to a total number of the warps of the warp beam; and a warp beam required for weaving is processed.
7. The method according to claim 4 or 5, wherein the refining comprises: desizing, degreasing, and preshrinking the woven grey cloth on a refiner.

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8. The method according to claim 7, wherein refining liquid used in refining has an alkali content of 2 g/l; a refining temperature is 95 to 98 ; a machine speed is controlled at 45 m/min.
- 5 9. The method according to any one of claims 4-8, wherein the splitting comprises: performing splitting and reducing erosion on the wefts with alkali liquor.
- 10 10. The method according to claim 9, wherein a concentration of the alkali liquor is controlled in 0.15 to 0.2 l/m, and a temperature of the alkali liquor is controlled in 90 to 100 .
- 10 11. The method according to any one of claims 4-10, wherein the setting comprises: performing high temperature drying and setting on the dyed fabric.
12. The method according to claim 11, wherein a temperature for setting is controlled in 130 to 150 , and the machine speed is controlled at 20 m/min.
- 15 13. An application of the double-sided absorbent fabric according to any one of claims 1-3, comprising: applying the double-sided absorbent fabric to children clothes, household bath textiles, or fabrics for wiping and maintaining high precision instrument and equipment.

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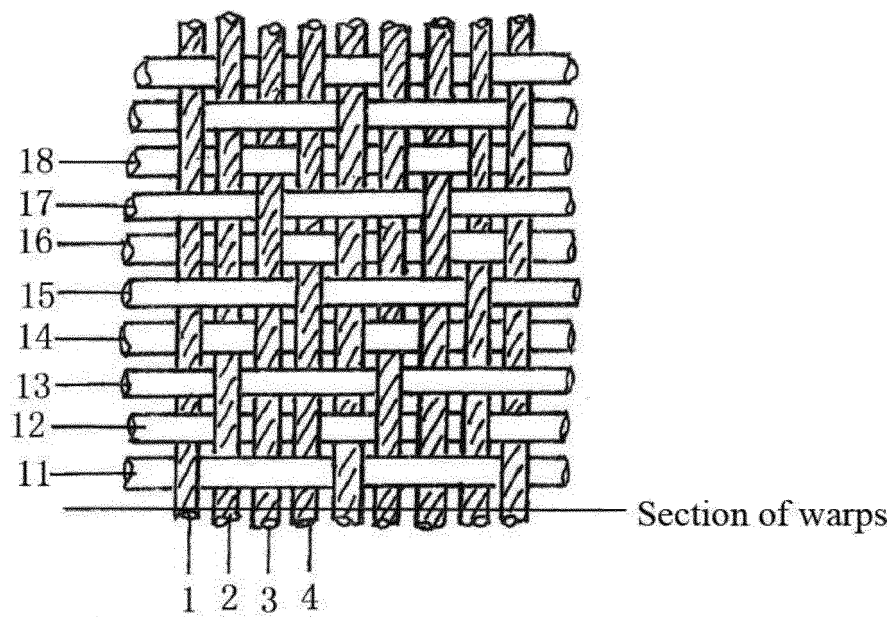


FIG. 1

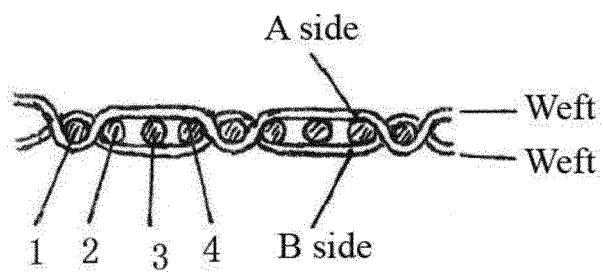


FIG. 2

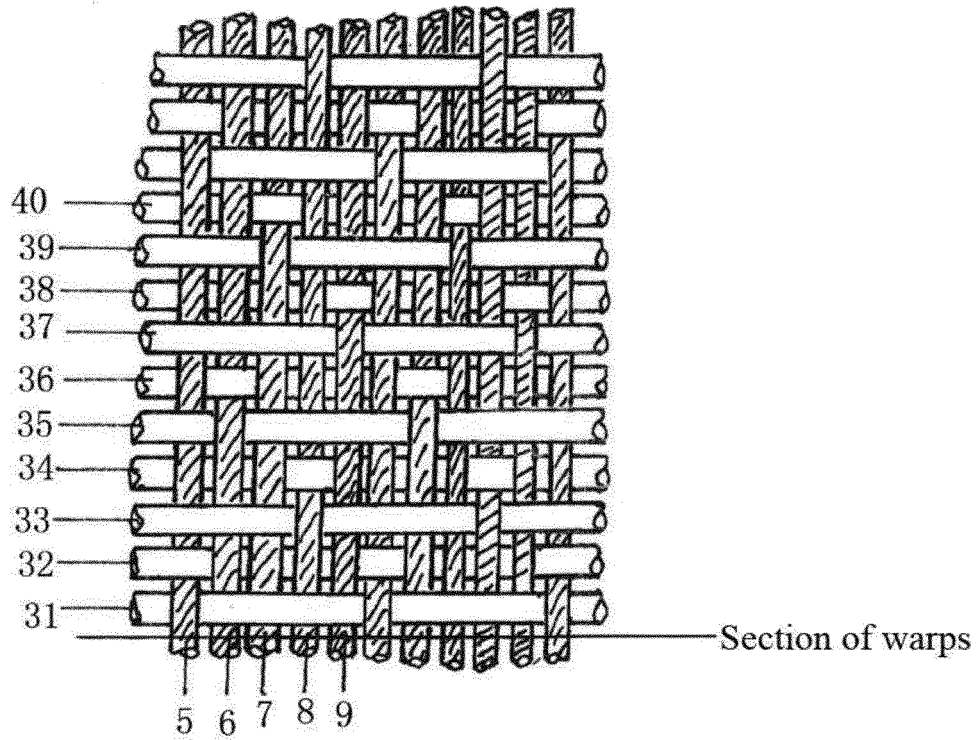


FIG. 3

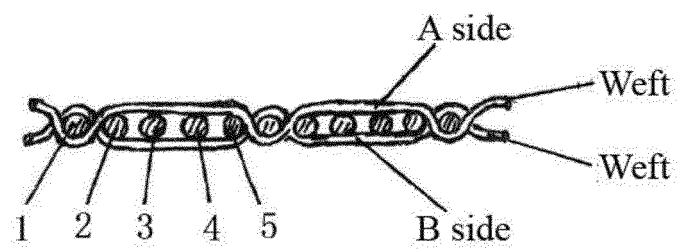


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2017/073555

A. CLASSIFICATION OF SUBJECT MATTER

D03D 27/06 (2006.01) i; D03D 13/00 (2006.01) i; D03D 15/00 (2006.01) i
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

D03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, VEN, CNKI, ISI_Web of Science: 双面, 吸水, 吸湿, 涤纶, 涤锦, 低弹丝, two?face?, double?face?, two?side?, double?side?, +absorpt+, +absorb+, low w stretch, low?stretch, low?elastic, low w elastic, weav+, cloth+, textile, fabric, polyester, terylene, dacron, PET, chinlon, nylon, PA, polyamide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 101294326 A (ZHU, Yanjun), 29 October 2008 (29.10.2008), description, page 1, paragraph 3 to page 2, paragraph 1 and page 2, paragraph 3, and particular embodiments	1-13
A	CN 204874996 U (JIANGSU JUJIE MICROFIBERS TEXTILE GROUP CO., LTD.), 16 December 2015 (16.12.2015), entire document	1-13
A	CN 101660239 A (WUJIANG HAICHENG TEXTILE CO., LTD.), 03 March 2010 (03.03.2010), entire document	1-13
A	CN 106192186 A (JIANGSU XINKAISHENG ENTERPRISE DEVELOPMENT CO., LTD.), 07 December 2016 (07.12.2016), entire document	1-13
A	CA 2127768 C (DAVIDSON, G.D.), 15 September 1998 (15.09.1998), entire document	1-13

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search 17 July 2017	Date of mailing of the international search report 26 July 2017
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer SHAO, Suxiu Telephone No. (86-10) 62084497

International application No.
PCT/CN2017/073555

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 101294326 A	29 October 2008	CN 101294326 B	15 June 2011
CN 204874996 U	16 December 2015	None	
CN 101660239 A	03 March 2010	None	
CN 106192186 A	07 December 2016	None	
CA 2127768 C	15 September 1998	CA 2127768 A1	12 January 1996

Form PCT/ISA/210 (patent family annex) (July 2009)