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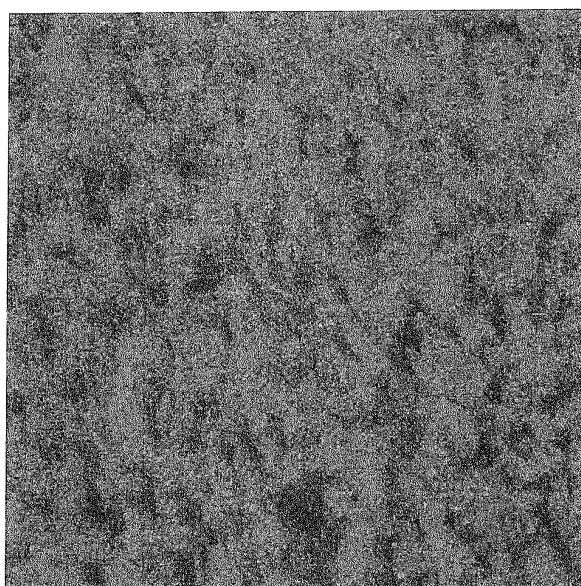
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(54) **YARN, FABRIC MANUFACTURED USING SAME, AND PRODUCT**

(57) The present invention relates to yarn. The yarn of the present invention is characterized in that it is prepared by placing at least one first yarn - which is made of one, or two or more strands of fiber - and at least one second yarn - which is made of one, or two or more

strands of fiber - parallel to one another and then performing intermingling that joins the first yarn and the second yarn together by nipping longitudinally, where a fineness of the first yarn and a fineness of the second yarn are different from each other.

FIG. 1



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Description**Technical Field**

5 **[0001]** The present invention relates to yarn, and a fabric and a textile product that use the yarn, and more particularly, to yarn that can be usefully employed in the preparation of a fabric for cleaning, and to a fabric and a textile product that are prepared using the yarn.

Background Art

10 **[0002]** Generally, microfibers are fibers of 1 denier or less and have a three-dimensional structure of ultra microfibers. They also have countless numbers of microspaces that were prepared during the processes of dyeing and splitting and thus are materials with excellent moisture absorbency, washability, texture, and ability to retain warmth. Microfiber-based dishcloths, rags, towels, robes and the like are well received due to their outstanding washability, rapid drying properties, 15 antibiotic property, durability, etc. In particular, microfiber-based cleaning rags have gained great popularity and been widely used due to advantages that they have, such as being more absorbent than regular cotton rags by 5 times or more and having higher efficiency and longer service life than regular cotton rags by 7 to 8 times, when used in removing ingrained dirt and the like by adsorbing thereto.

20 **[0003]** Usually, fabrics that were prepared by knitting and weaving of yarn to obtain a loop group and cutting the loops that were obtained through weaving are used to make cleaning rags. This is because the rags that were made of a fabric with an uncut loop group have a poor cleaning effect, since they cannot capture foreign substances (i.e. objects to be removed) but push them away. In other words, rags made of a fabric with a cut loop group exhibit an increased removal effect of foreign substances because foreign substances are removed by being trapped between cut loops during cleaning; thus, fabrics with a cut loop group are mostly used to make cleaning rags.

25 **[0004]** However, when microfibers are used as yarn during the preparation of fabrics that are used to make cleaning rags with a cut loop group, there is an advantage of increased polishing properties during an initial stage of cleaning due to the microfibers, but there is also a problem of a reduced cleaning effect, because the microfibers, due to their very low thickness, have low rebound resilience which leads to reduced elasticity and restitution that result in matting or entangling of threads when the microfibers absorb water or are compressed under pressure during cleaning, which 30 causes the sliding properties to degrade.

[0005] To solve such problems, Korean Patent No. 929510 discloses a pile fabric for cleaning in which a cut pile layer is made of pile yarn having a sheath-core type complex structure. Here, the pile yarn with a sheath-core type complex structure consists of at least one core-forming yarn having a fineness of 5 to 55 dtex and at least one sheath-forming yarn that has a fineness of 0.01 to 2.5 dtex and surrounds the core. Also, Korean Patent No. 716623 discloses a technique 35 that uses synthetic fiber divided yarn as the core yarn and a split-type microfiber as the covering yarn and includes yarn twisting of the split-type microfiber relative to the core yarn and heat-treating thereof so that the covering yarn is fixed to the core yarn.

[0006] When a fabric prepared by the above method is used to make a cleaning tool, it exhibits excellent properties in terms of polishing properties, sliding properties, absorbency, a rapid drying properties, and texture, as compared with 40 cleaning tools that use other existing fabrics.

[0007] In the aforementioned techniques, pile yarn, which is the yarn that is used in preparation of a fabric, is produced by winding covering yarn around core yarn which makes a core. However, when the yarn is prepared by winding the covering yarn around the core yarn as such, there are problems of an increased process time and high production cost per unit of the yarn, which lead to reduced productivity and increased production cost per unit of a finished fabric or 45 textile product, respectively.

Summary of Invention**Technical Problem**

50 **[0008]** Hence, after researching on the yarn that can be usefully employed in producing a fabric for cleaning, the present inventor has developed a type of yarn - particularly the one that can be prepared into a fabric that has a cut loop group and, when used to make a cleaning product, can easily capture foreign substances, such as ultrafine particles or hair, and enable maximization of properties - such as polishing properties, sliding properties, absorbency, a rapid drying properties, and texture - that can be produced in a simple way, thus enabling improvement of productivity and significant 55 reduction in the production cost, and thereby completed the present invention.

[0009] Therefore, the present invention is directed to providing a type of yarn that can be produced in a simple way, thus enabling significant reduction in the production cost, and can easily capture foreign substances such as ultrafine

particles or hair when used to make a cleaning product, so that properties such as polishing properties, sliding properties, absorbency, a rapid drying properties and texture can be maximized.

[0010] Also, the present invention is directed to providing a fabric and a textile product that are prepared using the above yarn.

Solution to Problem

[0011] To achieve the above-described objectives, the present invention provides yarn that is prepared by placing at least one first yarn - which is made of one, or two or more strands of fiber - and at least one second yarn - which is made of one, or two or more strands of fiber - parallel to one another and then performing intermingling that joins the first yarn and the second yarn together by nipping longitudinally, where a fineness of the first yarn and a fineness of the second yarn are different from each other.

[0012] The intermingling may be performed longitudinally at fixed intervals.

[0013] The intermingling may be performed at intervals of 2 mm to 1 m.

[0014] The intermingling may be carried out by air intermingling, in which compressed air is blown in.

[0015] A fineness of the first yarn may range from 4 to 60 deniers, and a fineness of the second yarn may range from 0.002 to 3.5 deniers.

[0016] A total fineness of the first yarn may range from 20 to 400 deniers, and a total fineness of the second yarn may range from 20 to 600 deniers.

[0017] The fiber of the first yarn may include at least one selected from the group consisting of natural plant fibers, natural animal fibers, regenerated fibers, semi-synthetic fibers, and synthetic fibers.

[0018] The fiber of the first yarn may be divided yarn.

[0019] The above divided yarn may include polyester divided yarn, nylon divided yarn, or rayon divided yarn.

[0020] The fiber of the second yarn may include at least one selected from the group consisting of rayon, polyester, polyamide, polyvinylidene chloride, and polypropylene.

[0021] The second yarn may be a split-type microfiber or sea island yarn, and preferably, the second yarn is a split-type microfiber made of polyester and nylon.

[0022] The first yarn or the second yarn may be twisted yarn.

[0023] In addition, the present invention provides a fabric that is prepared using the above yarn.

[0024] Furthermore, the present invention provides a textile product that is prepared by processing the above fabric.

[0025] The textile product may be any one selected from the group consisting of dishcloths, rags, kitchen mats, bath mats, towels, bath gloves, and dandruff remover cleaners.

Advantageous Effects of Invention

[0026] The above-described yarn of the present invention is prepared through intermingling, which joins together temporary yarn (which consists of the first yarn and the second yarn that have different fineness from each other) longitudinally by nipping, without particularly performing yarn twisting, and enables simplicity in a process of yarn production and very significant reduction (about 60 to 70%) in cost as compared with an existing method of preparing yarn by yarn twisting covering yarn relative to core yarn.

[0027] Not only that, when the yarn prepared according to the present invention is used to produce a fabric with a cut loop group and the fabric is used to produce a cleaning product or the like, the first yarn with a large fineness can wipe off, by capturing easily, foreign substances such as ultrafine particles or hair, and the second yarn with a small fineness can exhibit excellence in properties such as polishing properties, sliding properties, absorbency, a rapid drying properties, and texture.

[0028] The above-described yarn of the present invention can be usefully employed to produce fabrics such as woven fabrics or knitted materials, such fabrics can be usefully employed in products such as dishcloths, rags, various mats, towels, or bath products.

Brief Description of Drawings

[0029] FIG. 1 is a photographic image of a surface of a fabric that is prepared according to one exemplary embodiment of the present invention.

Detailed Description of Embodiment

[0030] Hereinafter, the present invention will be described in more detail as follows.

[0031] The yarn of the present invention is prepared by including at least one first yarn and at least one second yarn.

[0032] The first yarn may be made of one, or two or more strands of fiber. Likewise, the second yarn may be made of one, or two or more strands of fiber.

[0033] According to the present invention, the fineness that constitutes the first yarn and the fineness that constitutes the second yarn are different from each other. For example, the fineness that constitutes the first yarn may be greater than the fineness that constitutes the second yarn.

[0034] For example, the fineness of the first yarn may be in the range of 4 to 60 deniers, and the fineness of the second yarn may be in the range of 0.002 to 3.5 deniers. Also, the total fineness of the first yarn may range from 20 to 400 deniers, and the total fineness of the second yarn may range from 20 to 600 deniers.

[0035] When the yarn of the present invention is produced into a fabric with a cut loop group, the first yarn that has a relatively large thickness plays a role in increasing a coefficient of restitution, which leads to improved restitution and resilience. Therefore, when the produced fabric is used as a cleaning rag, cut loops recover immediately after being compressed under pressure, and thus the degradation of cleaning efficiency by reduced sliding properties may be prevented from happening. For the first yarn to be sufficiently effective, it is preferable that the fineness of the first yarn is in the range of 4 to 60 deniers and the total fineness of the first yarn is in the range of 20 to 400 deniers.

[0036] In the case that the fineness that constitutes the first yarn is less than 4 deniers and the total fineness of the first yarn is less than 20 deniers, there is a problem in producing the yarn into a fabric with a cut loop group in which the restitution and resilience of cut loops are not sufficiently improved. Also, when the fineness that constitutes the first yarn is greater than 60 deniers and the total fineness the first yarn is greater than 400 deniers, there is a problem in that a fabric that is produced using the yarn and has a cut loop group may scratch the surface that it wipes.

[0037] When the yarn of the present invention is used for the production of a fabric with a cut loop group, the second yarn that has a relatively small thickness plays a role in improving absorbency or a rapid drying properties and texture. Therefore, when the produced fabric is used as a cleaning rag or the like, the second yarn exhibits excellence in absorbency or a rapid drying properties and texture. For the second yarn to be sufficiently effective, it is preferable that the fineness of the second yarn ranges from 0.002 to 3.5 deniers and the total fineness of the second yarn ranges from 20 to 600 deniers.

[0038] In the case that the fineness that constitutes the second yarn is less than 0.002 deniers and the total fineness of the second yarn is less than 20 deniers, there is a problem in producing the yarn into a fabric with a cut loop group in which the rapid drying properties degrades. Also, when the fineness that constitutes the second yarn is greater than 3.5 deniers and the total fineness of the second yarn is greater than 600 deniers, there is a problem of reduced absorbency and poor texture.

[0039] The first yarn may be made of one, or two or more strands of fiber, and when it is made of two or more strands of fiber, the strands of fiber may have the same fineness or different fineness. Also, when the first yarn consists of two or more strands of fiber, the strands may be made of an identical material or different materials. Also, when the first yarn consists of two or more strands of fiber, the first yarn may have been prepared to have a shape of a single thread by yarn twisting or intermingling.

[0040] Here, yarn twisting refers to the act of joining together and yarn twisting two or more strands of a thread and is usually distinguished according to a direction in which yarn twisting is performed during a yarn twisting operation; when twisted to the left, it is referred to as left (hand) twist or Z twist, and when twisted to the right, it is called right (hand) twist or S twist. Machines widely used in such yarn twisting include a ring twister and a flyer twister.

[0041] Preferably, the fiber of the first yarn includes at least one selected from the group consisting of natural plant fibers, natural animal fibers, regenerated fibers, semi-synthetic fibers, and synthetic fibers.

[0042] Preferably, the fibers of the first yarn are divided yarns. The divided yarns may be polyester divided yarns, nylon divided yarns, or rayon divided yarns. Preferably, the divided yarns consist of 2 to 50 strands of fiber. Examples of currently available polyester divided yarns include those with a fineness of 200 D (denier)/10 F (filament), 300 D/10 F, 320 D/8 F and 300 D/6 F, nylon divided yarns include 180 D/12 F or 240 D/12 F, rayon divided yarns include those with fineness of 200 D/10 F, 300 D/10 F, 320 D/8 F and 300 D/6 F, and the present invention is not limited thereto.

[0043] The second yarn may be made of one, or two or more strands of fiber, and when it consists of two or more strands of fiber, the strands may have the same fineness or different fineness. Also, when the second yarn consists of two or more strands of fiber, the strands may be made of an identical material or different materials from one another. Also, when the second yarn consists of two or more strands of fiber, it may have been produced to have a shape of a single thread by yarn twisting.

[0044] The fiber of the second yarn may include at least one selected from the group consisting of rayon, polyester, polyamide, polyvinylidene chloride, and polypropylene.

[0045] Preferably, the second yarn is a split-type microfiber or sea island yarn.

[0046] Here, those generally known in the art may be used without restriction. For example, the second yarn may be a split-type microfiber made of polyester and nylon.

[0047] To prepare yarn using the aforementioned first yarn and second yarn, in the present invention, at least one first yarn and at least one second yarn are placed parallel to each other and subjected to intermingling that joins the first

yarn and the second yarn together by nipping longitudinally.

[0048] In this case, as the intermingling method, any of those generally used in the art may be used without restriction. For example, the intermingling may be formed through air intermingling, in which compressed air is blown in. However, the intermingling may be variously modified to suit the need; for example, intermingling by heat pressing is possible for

joining the first yarn and the second yarn together.

[0049] In this case, the intermingling may be provided over the entire longitudinal direction. Preferably, the intermingling is provided at fixed intervals in the longitudinal direction; preferably, the intermingling is provided at intervals of 2 mm to 1 m. When the intermingling is provided at the above-described interval, production of a fabric, such as a woven fabric or a knitted material, may be facilitated, using the prepared yarn.

[0050] When a fabric is produced by intermingling - not by a conventional covering method - at least one first yarn and at least one second yarn that were placed parallel to one another yarn as described above, it is advantageous in that the production process of a fabric is simple and the production cost per unit of yarn is very significantly reduced (by about 60 to 70%) as compared with an existing preparation method using yarn twisting of covering yarn relative to core yarn. Not only that, when a fabric with a cut loop group, which can be usefully employed for cleaning, is produced using the yarn of the present invention, a textile product with an equal or greater effectiveness may be obtained.

[0051] The yarn of the present invention that is prepared as described above may be made into a fabric having a form of a woven fabric or a knitted material. Preferably, the yarn of the present invention may be usefully employed in a fabric for cleaning, in particular, in the production of a fabric with a loop group.

[0052] For example, a preliminary fabric that has a loop pile by using the above-described yarn of the present invention either as a warp or as a weft and has a form of a woven fabric or a knitted material may be produced. There is no restriction to a structure of the preliminary fabric, and, for example, a pile woven fabric - such as a single-sided pile, a double-sided pile, or a double velvet - obtained by a pile weaving machine and a pile knitted material obtained by a tricot knitting machine, a raschel knitting machine, a sinker pile knitting machine, or a sseal knitting machine may be included thereto.

[0053] After the production of a preliminary fabric with a loop group is completed, the loops may be cut so that the fabric can have a cut loop group. In this case, if necessary, a process - such as raising, caustic reduction, dyeing - that is generally carried out in the art may be added before or after cutting. In FIG. 1, a photographic image of a surface of a fabric that has a cut loop group and has been subjected to weight deduction and a dyeing process.

[0054] A fabric that is produced as described above - in particular, a fabric with a cut loop group - may be able to be usefully employed in various textile products. In this case, it is preferable that the length of the cut piles is in the range of 1 mm to 50 mm. The length of the cut pile may be adjusted by adjusting, to suit the application of the produced fabric, the length of the loops that are subjected to raising and then cutting the loops. When the produced fabric is intended for a bathing application, for example as a towel, the length of the cut loops is suitably in the range of 2 mm to 5 mm, and when the produced fabric is to be used as a rag, the length of the cut loops is suitably in the range of 8 mm to 25 mm.

[0055] When observed, the first yarn and the second yarn are irregularly arranged in the cut loops as shown in FIG. 1. The first yarn exists in a state in which it is separated into multiple filament yarns and contributes to sufficient restitution and resilience. The second yarn exists in a state in which it is separated into multiple microfibrinous filaments and offers excellence in absorbency or a rapid drying properties and texture.

[0056] The present invention provides a textile product that is produced by processing the above-described fabric. The textile product may be any one selected from the group consisting of dishcloths, rags, kitchen mats, bath mats, towels, bath gloves, and dandruff remover cleaners.

[0057] For example, when a fabric that is prepared according to the present invention is cut to a predetermined size, processed, and used as a cleaning rag, very high polishing properties is achieved. Also, the above fabric may be used as a mat that is installed in a bathroom or in a kitchen, or it may be used in various applications such as golf turf. In particular, it is advantageous in that, when used as a mat that is installed in a bathroom or in a kitchen, it absorbs water on a body or water that is scattered during washing in the kitchen, thus making the area clean and preventing a floor from becoming slippery due to fallen water drops. Also, since the rebound resilience of the cut loops is high, naps are raised with ease and excellent shock absorbency and texture are provided.

[0058] Hereinafter, the present invention will be described in more detail with reference to the following exemplary embodiments, which are presented only for better understanding of the present invention and not to limit the present invention thereto.

<Example 1>

[0059] 300 D/10 F polyester divided yarn was used as the first yarn, and a split-type microfiber made of 150 D/72 F nylon and polyester (where each filament is a 16 split-type, and polyester and polyamide (nylon) make up 80% and 20%, respectively) was used as the second yarn.

[0060] A single strand of the first yarn and two strands of the second yarn were placed parallel to one another and

then intermingled at intervals of 5 mm so that the first yarn and the second yarn together attain the form of a single thread. In this case, the intermingling was performed by an air intermingling pirn winder (Daewon Industrial Co., Ltd.).

<Example 2>

[0061] 200 D/10 F polyester divided yarn was used as the first yarn, and a split-type microfiber made of 120 D/10 F nylon and polyester (where each filament is a 16 split-type, and polyester and polyamide (nylon) make up 80% and 20%, respectively) was used as the second yarn.

[0062] Two strands of the first yarn and four strands of the second yarn were placed parallel to one another and then intermingled at intervals of 5 mm so that the first yarn and the second yarn together attain the form of a single thread. In this case, the intermingling was performed by an air intermingling pirn winder (Daewon Industrial Co., Ltd.).

<Example 3>

[0063] 180 D/12 F nylon divided yarn was used as the first yarn, and a split-type microfiber made of 120 D/10 F nylon and polyester (where each filament is a 16 split-type, and polyester and polyamide (nylon) make up 80% and 20%, respectively) was used as the second yarn.

[0064] Two strands of the first yarn and four strands of the second yarn were placed parallel to one another and then intermingled at intervals of 5 mm so that the first yarn and the second yarn together attain the form of a single thread. In this case, the intermingling was performed by an air intermingling pirn winder (Daewon Industrial Co., Ltd.).

<Example 4>

[0065] 300 D/10 F polyester divided yarn was used as the first yarn, and a split-type microfiber made of 150 D/72 F and 150 D/48 F nylon and polyester (where each filament is a 16 split-type, and polyester and polyamide (nylon) make up 80% and 20%, respectively) was used as the second yarn.

[0066] A single strand of the first yarn and two strands of the second yarn were placed parallel to one another and then intermingled at intervals of 5 mm so that the first yarn and the second yarn together attain the form of a single thread. In this case, the intermingling was performed by an air intermingling pirn winder (Daewon Industrial Co., Ltd.).

<Comparative Example 1 >

[0067] Yarn was prepared by using 300 D/10 F polyester divided yarn as divided yarn and a split-type microfiber made of 120 D/10 F nylon and polyester (where each filament is a 16 split-type, and polyester and polyamide (nylon) make up 80% and 20%, respectively) as covering yarn and yarn twisting covering yarn (Z twist) around core yarn (S twist). In this case, the yarn twisting was performed by a yarn twisting machine primarily to obtain an S twist with the twists numbering 600 TPM (twist per meter) and secondarily to obtain a Z twist with the twists numbering 540 TPM.

<Experimental Example>

[0068] The yarn that was prepared according to the examples and the comparative example above were knitted in a circular knitting machine to have a loop group on one side and then woven, raised and the loops were cut to produce a cut loop fabric having the cut loops with a length of 8 mm. A photographic image of a surface of a cut loop fabric, which was produced using the yarn that was prepared according to Example 1, is shown in FIG. 1.

[0069] After a rag was prepared by cutting, into a rectangle, and then finishing the above fabric, the polishing properties, sliding properties, restitution, absorbency, a rapid drying properties and texture of the prepared rag were evaluated by the following method, and the results are provided in the following Table 1.

- Polishing properties -

[0070] 50 ml of coffee was poured over a floor covering that measured 2m in both width and length and then wiped off with the rag. 30 housewives in their 30s to 40s were asked to observe the surface of the floor covering with the naked eye and evaluate the polishing properties on a scale of excellent, fair, and poor.

- Sliding properties -

[0071] 100ml of water was poured over the rag, and then 30 housewives in their 30s to 40s were asked to wipe a floor covering that measures 2m in both width and length and evaluate the sliding properties on a scale of excellent, fair, and

poor.

- Restitution -

5 **[0072]** A 10-kg weight (10x200x200 mm) was put on a surface of the rag for 30 seconds and then the weight was removed. After 30 seconds has passed, the surface of the rag was observed with the naked eye and the restitution was evaluated as good, if the cut loops were recovered, or poor, if they remained depressed.

- Absorbency -

10 **[0073]** The absorbency was evaluated as follows: the rag was cut to a width of 2 cm, and while 1 cm of the bottom thereof was immersed in water, the time required for the water to rise by 1 cm was measured to evaluate the absorbency.

- Drying ability -

15 **[0074]** The rag was weighed, 10 g of water was poured over a surface thereof, and then the rag was dried at room temperature. The drying ability was evaluated by measuring the time required for the weight of the rag to return to its initial weight.

20 - Texture -

[0075] 30 housewives in their 30s to 40s were asked to touch a surface of the rag and evaluate the texture on a scale of very good (5 points), good (4 points), fair (3 points), poor (2 points), and very poor (1 point), and an average thereof was taken.

25 - Color fastness to washing -

[0076] The test was conducted by a standard method in accordance with KS K ISO 105-C01:207 (40 ± 2 °C, 30 minutes, 1% Spark(manufactured by Aekyung Co., Ltd.)).

<Table 1>

Classification		Example 1	Example 2	Example 3	Example 4	Comparative Example 1
Polishing Properties (number of respondents)	Excellent	28	28	27	28	24
	Fair	2	2	3	2	5
	Poor	0	0	0	0	1
Sliding Properties (number of respondents)	Excellent	29	28	28	27	24
	Fair	1	2	2	3	4
	Poor	0	0	0	0	2
Restitution		Good	Good	Good	Good	Good
Absorbency (sec)		1.0	0.9	1.1	1.4	1.6
Rapid drying properties (minutes)		180	170	180	170	180
Texture		4.9	4.6	4.6	4.6	4.6
Color fastness to washing (grade)	Discoloration	4-5	4-5	4-5	4-5	4-5
	Contamination (polyester)	4-5	4-5	4-5	4-5	4-5

55 **[0077]** As shown in Table 1 above, it can be recognized that rags that were produced using the yarn that was prepared according to Examples 1 to 4 of the present invention exhibit excellent polishing properties, sliding properties, and texture, in comparison to the fabric of Comparative Example 1 that was prepared according to a conventional method.

[0078] In particular, as compared with the yarn prepared by a conventional method, the yarn that was prepared

according to the present invention does not require an additional covering operation and thus can be produced by a simple production process and particularly, at a significantly reduced production cost. Nevertheless, the cleaning rags that were produced as thus are equally or even more effective.

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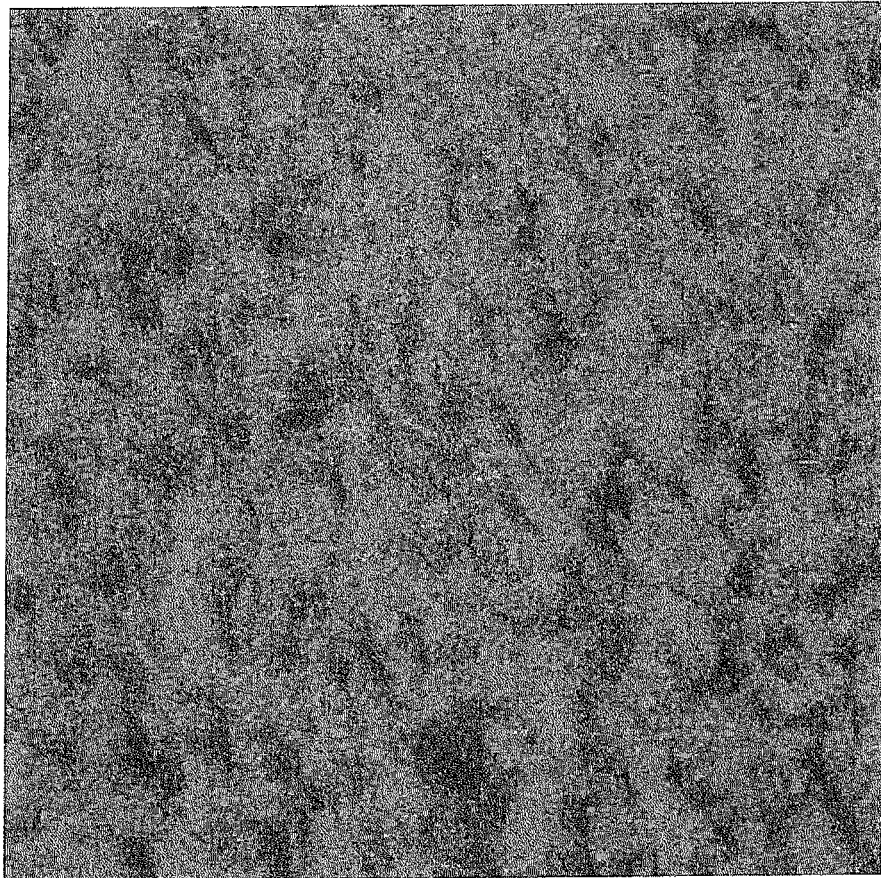
Claims

1. Yarn that is prepared by placing at least one first yarn - which is made of one, or two or more strands of fiber - and at least one second yarn - which is made of one, or two or more strands of fiber - parallel to one another and then performing intermingling that joins the first yarn and the second yarn together by nipping longitudinally, where a fineness of the first yarn and a fineness of the second yarn are different from each other.
2. The yarn of claim 1, wherein the intermingling is performed longitudinally at fixed intervals.
3. The yarn of claim 1, wherein the intermingling is performed at intervals of 2 mm to 1 m.
4. The yarn of claim 1, wherein the intermingling is carried out by air intermingling, in which compressed air is blown in.
5. The yarn of claim 1, wherein a fineness of the first yarn ranges from 4 to 60 deniers and a fineness of the second yarn ranges from 0.002 to 3.5 deniers.
6. The yarn of claim 1, wherein a total fineness of the first yarn ranges from 20 to 400 deniers and a total fineness of the second yarn ranges from 20 to 600 deniers.
7. The yarn of claim 1, wherein the fiber of the first yarn includes at least one selected from the group consisting of natural plant fibers, natural animal fibers, regenerated fibers, semi-synthetic fibers, and synthetic fibers.
8. The yarn of Claim 7, wherein the fiber of the first yarn is divided yarn.
9. The yarn of claim 8, wherein the divided yarn is polyester divided yarn, nylon divided yarn, or rayon divided yarn.
10. The yarn of claim 1, wherein the fiber of the second yarn includes at least one selected from the group consisting of rayon, polyester, polyamide, polyvinylidene chloride, and polypropylene.
11. The yarn of claim 1, wherein the second yarn is multifilament yarn, a split-type microfiber, or sea island yarn.
12. The yarn of claim 11, wherein the second yarn is a split-type microfiber made of polyester and nylon.
13. The yarn of claim 1, wherein the first yarn or the second yarn is twisted yarn.
14. A fabric that is produced using the yarn of any one of claim 1 to claim 13.
15. A textile product that is produced by processing the fabric of claim 14, wherein the fabric is for a cleaning application.
16. The textile product of claim 15, which is any one selected from the group consisting of dishcloths, rags, kitchen mats, bath mats, towels, bath gloves, and dandruff remover cleaners.

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FIG. 1



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2015/013098

A. CLASSIFICATION OF SUBJECT MATTER

D02G 1/16(2006.01)i, D02G 3/04(2006.01)i, D01F 8/00(2006.01)i, D03D 1/00(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)

D02G 1/16; D02G 3/38; D06C 11/00; D03D 27/00; D06C 13/08; D01F 6/62; D01D 5/20; D04B 1/04; A47L 13/16; A47L 13/20; D01F 8/00; D02G 3/04; D03D 1/00; D03D 15/00

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

Korean Utility models and applications for Utility models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

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

eKOMPASS (KIPO internal) & Keywords: yarn, inter, air intermingle, mother yarn for split, cut-loop structure, multifilament yarn, split-type microfiber, sea-island fiber, twist yarn, cleaning fabric, dishcloth, mop

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-0737976 B1 (SAEHAN INDUSTRIES INCORPORATION) 13 July 2007 See abstract; claim 1; pages 4-6; and figures 1-3.	1-7,10,11,14-16
Y		8,9,12,13
Y	KR 10-0716623 B1 (CHOI, Sung Hoon) 09 May 2007 See abstract; and page 5.	8,9,12
Y	KR 10-1258053 B1 (CHOI, Jin Hwa) 24 April 2013 See abstract; claim 1; paragraph [0010]; and figures 1-3.	13
A	KR 10-2014-0120730 A (AN, Jeung-Seop et al.) 14 October 2014 See abstract; claims 1, 2; and paragraphs [0007], [0012]-[0018].	1-16
A	KR 10-2014-0137559 A (BOO, Nam Hae) 03 December 2014 See abstract; and claims 1-8.	1-16
E	KR 10-2015-0136364 A (CLEMBON CO., LTD.) 07 December 2015 See the entire document.	1-16

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

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"&" document member of the same patent family

Date of the actual completion of the international search

27 OCTOBER 2016 (27.10.2016)

Date of mailing of the international search report

31 OCTOBER 2016 (31.10.2016)

Name and mailing address of the ISA/KR


 Korean Intellectual Property Office
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 Republic of Korea

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Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2015/013098

Patent document cited in search report	Publication date	Patent family member	Publication date
KR 10-0737976 B1	13/07/2007	NONE	
KR 10-0716623 B1	09/05/2007	NONE	
KR 10-1258053 B1	24/04/2013	NONE	
KR 10-2014-0120730 A	14/10/2014	KR 10-1479068 B1	07/01/2015
KR 10-2014-0137559 A	03/12/2014	NONE	
KR 10-2015-0136364 A	07/12/2015	KR 10-1609326 B1	05/04/2016

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- KR 929510 [0005]
- KR 716623 [0005]