A textile article that includes a shawl that includes functional features.
SHAWL TEXTILE ARTICLE AND METHOD OF MAKING SAME
CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Patent Application No. 62/232,441, filed Sep. 25, 2015, which is incorporated by reference herein.

TECHNICAL FIELD

[0002] The present disclosure relates to a textile article, such as a shawl, and a method of making same

BACKGROUND

[0003] A shawl is a simple clothing accessory, usually rectangular in shape and large enough to be loosely worn over the shoulders, upper body and sometimes over the head. Shawls are mostly light to medium weight fabrics made from wool, rayon, cotton fiber yarns. Shawl fabrics are loosely constructed and course count yarns. When worn, shawls can provide some level of thermal insulation and warmth in cool weather.

SUMMARY

[0004] There is a need for a textile article, such as a shawl, with improved functional features. In accordance with an embodiment, a shawl article is configured for thermoregulation. The shawl article includes an elongate panel having a first end, a second end spaced from the first end along a first direction, and opposed side edges spaced apart with respect to each other along a second direction that is perpendicular to the first direction. The elongate panel includes a plurality of warp yarns that extend along the first direction, and a plurality of weft yarns interwoven with the plurality of warp yarns along the second direction so to define a woven fabric. The plurality of warp yarns includes at least cotton fibers and has a yarn count of about 40 Ne to about 100 Ne. The plurality of weft yarns include thermoregulation yarns, wherein the thermoregulation yarns comprise at least about 50% by weight of the shawl.

[0005] Another embodiment of the present disclosure includes a shawl article configured for thermoregulation. The shawl article includes an elongate panel having a first end, a second end spaced from the first end along a first direction, and opposed side edges spaced apart with respect to each other along a second direction that is perpendicular to the first direction. The plurality of warp yarns include phase change yarns, wherein the phase change yarns comprise at least about 50% by weight of the shawl.

[0006] Another embodiment of the present disclosure includes a shawl article configured for thermoregulation. The shawl article includes an elongate panel having a first end, a second end spaced from the first end along a first direction, and opposed side edges spaced apart with respect to each other along a second direction that is perpendicular to the first direction. The elongate panel includes a plurality of warp yarns that extend along the first direction, and a plurality of weft yarns interwoven with the plurality of warp yarns along the second direction so to define a woven fabric. The plurality of warp yarns including a blend of rayon and wool fibers, the warp yarns having a yarn count of about 10 Ne to about 40 Ne. The plurality of weft yarns include phase change yarns, wherein the phase change yarns comprise at least about 50% by weight of the shawl.

[0007] Another embodiment of the present disclosure includes a method of manufacturing a shawl article. The method includes the step of weaving a plurality of warp yarns with a plurality of warp yarns to define a woven fabric, wherein the warp and the weft yarns include a count of about 10 Ne to about 106 Ne. The weft yarns include thermoregulation components, such that at least 50% by weight of the woven fabric includes thermoregulation components. The method includes forming the woven fabric into the shawl article.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The foregoing summary, as well as the following detailed description of illustrative embodiments of the present application, will be better understood when read in conjunction with the appended drawings. For the purposes of illustrating the present application, there is shown in the drawings illustrative embodiments of the disclosure. It should be understood, however, that the application is not limited to the precise arrangements and instrumentalities shown.

[0009] FIG. 1 is a plan view of a textile article according to an embodiment of the present disclosure.

[0010] FIG. 2 is a schematic process flow diagram for manufacturing the textile article illustrated in FIG. 1.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

[0011] As shown in FIG. 1, an embodiment of the present disclosure includes a textile article 2, such as a shawl 10. The shawl 10 includes a panel 12 that includes a textile material that includes thermal regulation components. The shawl 10 is a sleek, soft, comfortable textile article that provides functional benefits not found in typical shawls or other similar accessories.

[0012] Continuing with FIG. 1, the panel 12 includes a first end 22, a second end 24 spaced from the first end 22 along a first direction 4, and opposed side edges 26 and 28 spaced apart with respect to each other along a second direction 6 that is perpendicular to the first direction 4. The shawl 10 defines a length L that extends from end 22 to the end 24 along the first direction 4 and a width W that extends from side 26 to the side 28 along the second direction 6. As illustrated, the shawl 10 has a length L that is greater than the width W. In one example, the length L is about 20 to about 100 inches (about 50 to about 255 cm). In other words, the length L is about 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 inches. The width W is about 20 to about 100 inches (about 50 to about 255 cm). In other words, the width W is about 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 inches. Furthermore, the shawl 10 is not limited to the shape illustrated. In some embodiments, length L and width W is 84 inches and 28 inches, respectively. Furthermore, the shawl 10 can include non-rectilinear shapes as needed such as circular (round), triangular (a shape with 3 even or differently sized sides), trapezoidal, or sizes having 5 or more sides.

[0013] The shawl 10 is formed from a textile material that includes a composition of one or more thermal regulation components. In accordance with the illustrated embodiment, the textile material may be a woven fabric that includes a
plurality of warp yarns and a plurality of weft yarns interwoven with the plurality of warp yarns to define a woven structure. The textile material may also include yarns formed from particular blends of cotton, silk, rayon, or wool fibers. [0014] The woven fabric may be defined by a number of different woven structures. Exemplary woven structures include, but are not limited to, satins (e.g., satins, 4/1 satin, 4/1 satin base pique texture, 4/1 satin & sateen reversible stripe, 4/1 satin jacquard weave, 4/1 satin base stripe, 4/1 satin swiss dot, 4/1 down jacquard, 5/1 satins, 6/6 satins, and 3/1 satins), 1x1 plain weave, basket weaves, 2x1 rib weave, 2x2 rib weave, or 3x1 rib weave, and twill weaves. In one example, the panel 12 can include different woven structures along the length L and width W of the shawl 10.

[0015] The warp yarns can be any type of spun yarn structure. For example, the warp yarns can be ring spun yarns, open end yarns, compact spun yarns, or rotor spun yarns, or filaments. In another embodiment, the warp yarns can be Hygrocotton® brand yarns marketed by Welspun India Limited. Furthermore, yarns can be formed as disclosed in a U.S. Pat. No. 8,833,075, entitled “Hygro Materials for Use In Making Yarns And Fabrics,” (the 075 patent). The 075 patent is incorporated by reference into present disclosure. Preferred warp yarns are ring spun yarns.

[0016] The warp yarns can be formed from any number of fiber types but are preferably blended yarns. While blended warp yarns are preferred, the warp yarns could be formed from single fiber yarns. Accordingly, the warp yarns can be formed from natural fibers, synthetic fibers, or blends of natural and synthetic fibers. Preferred natural fibers include cotton, silk, and wool. However, other natural fibers could be used, such as flax, bamboo, hemp, and the like. Synthetic fibers are those fibers that result in fabric structures with good hand, drape, and softness. Preferred synthetic fibers may include rayon fibers (e.g. Tencel). In some examples, thermoplastic fibers could be used in blend yarns, such as polyethylene terephthalate (PET) fiber, polyactic acid (PLA) fiber, polypropylene (PP) fibers, polyamide fibers, and microfiber staple fibers formed therefrom.

[0017] As described above the warp yarns are preferably blended yarns. In one embodiment, the warp yarns are blended yarns that include cotton fibers and silk fibers. Such blended yarns can include about 50 to about 80% by weight cotton fibers. In the words, the blending yarns include about 50, 55, 60, 65, 70, 75, or about 80%, by weight cotton fibers. The blend yarns can also include about 20 to about 50% by weight silk fibers. In other words, the blended yarns can include about 20, 25, 30, 35, 40, 45, or about 50% by weight silk fibers. In one example, the warp yarns are blended yarns that include about 70% by weight cotton fibers and about 30% by weight silk fibers.

[0018] In another embodiment, the warp yarns are blended yarns that include cotton fibers and rayon fibers. For instance, such blended yarns include about 40 to about 80% by weight rayon fibers. In other words, the blended yarns include about 40, 45, 50, 55, 60, 65, 70, 75, or about 80%, by weight rayon fibers. The blended yarns can also include about 20 to about 60% by weight cotton fibers. In other words, the blended yarns include about 20, 25, 30, 35, 40, 45, 50, 55, or about 60%, by weight cotton fibers. In one example, the blended yarns include about 60% by weight rayon fibers and about 40% by weight cotton fibers.

[0019] In another embodiment, the warp yarns are blended yarns that include wool and rayon fibers. For instance, such blended yarns include about 40 to about 80% by weight wool fibers. For example, the blending yarns can include about 40, 45, 50, 55, 60, 65, 70, 75, or 80% by weight wool fibers. The blended yarns can include about 20 to about 60% by weight rayon fibers. For example, the blending yarns can include about 20, 25, 30, 35, 40, 45, 50, 55, or about 60% by weight rayon fibers. In one example, the blended yarns include about 60% by weight wool fibers and about 40% by weight wool fibers.

[0020] In yet another embodiment, the warp yarns are formed from one fiber type. For instance, such warp yarns include cotton fibers.

[0021] The warp yarns have a range of finer counts for the yarn types and fibers as described above. For instance, the warp yarns can have a count of about 40 to about 100 Ne. In one example, the warp yarns have a count of about 40 Ne. In another example, the warp yarns have a count of about 45 Ne. In another example, the warp yarns have a count of about 50 Ne. In another example, the warp yarns have a count of about 55 Ne. In another example, the warp yarns have a count of about 60 Ne. In another example, the warp yarns have a count of about 65 Ne. In another example, the warp yarns have a count of about 70 Ne. In another example, the warp yarns have a count of about 80 Ne. In another example, the warp yarns have a count of about 85 Ne. In another example, the warp yarns have a count of about 90 Ne. In another example, the warp yarns have a count of about 95 Ne. In another example, the warp yarns have a count of about 100 Ne. In addition, the warp yarns can be plied yarns. In one example, natural fiber yarn is a 2-ply yarn. In another example, the warp yarn is a 3-ply yarn. In one example, the warp yarns have a twist multiple of about 3.6 to about 4.2. In other words, the warp yarns have a twist multiple of about 3.6, 3.7, 3.8, 3.9, 4, 4.1, or 4.2.

[0022] The weft yarns can be any type of spun yarn structure that includes one or more thermal regulation components. For example, the weft yarns can be ring spun yarns, open end yarns, compact yarns, or rotor spun yarns, or filaments. In another embodiment, the weft yarns can be Hygrocotton® brand yarns.

[0023] The thermoregulation components can be a) thermoregulation fibers that include heat absorbing materials embedded in the fibers, or b) fibers with phase change materials (PCMs) embedded therein. The thermoregulation components can be blended with natural or synthetic fibers. Preferably, the thermoregulation fibers are blended with cotton fibers. In alternative embodiments, the weft yarns include natural fibers, synthetic fiber yarns, or blends of natural and synthetic fibers, similar to those described above with respect to the warp yarns.

[0024] In accordance with one embodiment, the weft yarns are formed with thermoregulation fibers that are loaded with a mix of active materials, such as thermo-reactive materials. In one example, the thermos-reactive fibers may include silicon, carbon, and various vitreous glasses including oxides of aluminum, titanium, silicon, boron, calcium, sodium, and lithium. Preferred materials are titanium dioxide, quartz, aluminum and oxide within a core of a fiber. In some embodiments, the thermoregulation fibers may be formed into spun or filament yarns. The thermoregulation fibers used in spun yarns having range of denier and staple lengths, such as between 0.5 denier to 3 denier and a staple length between 1 inch to 3 inches. Thermoregulation spun yarns can have a count of about 35 to about
106 Ne. Thermoregulation filament yarns can have a count of about 50 to about 150 denier. The denier could about 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, or 150 denier. In one example, the thermoregulation filament yarns are about 50/36 denier, 70/68 denier 75/72 denier or 150/144 denier. Filament yarns may include PET or Nylon filament. The thermoregulation fibers and yarns may be manufactured according to U.S. Patent Pub. No. 2004/0043174, entitled Polymeric Fiber Composition And Method, the entirety of which is incorporated by reference into this document. In one example, thermoregulation fibers are Celliant fibers, available from Hologenix, LLC.

[0025] Shawls formed using the thermoregulation fibers are constructed so that such yarns comprise of about 55 to about 65% by weight of the overall weight of the shawl. For example the thermoregulation fibers may comprise about 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, or 65%, by weight of the overall weight of the shawl. The active materials in the thermoregulation fibers and yarns described above are designed to absorb radiant body heat and convert the radiant body heat into infrared energy that is reflected back into the body. There are several benefits to the human body receiving such infrared energy. Infrared energy boosts the flow of blood to tissue throughout the body improving circulation while increasing oxygen levels. Infrared energy also stimulate cell performance and regeneration, while the increased circulation nourishes the cells with higher levels of oxygen—further promoting cell health. Enhanced cell function means injuries heal quicker, pain subsides faster, and stamina and endurance are amplified. By optimizing blood flow, the thermoregulation fibers also make it easier for the body to maintain an appropriate temperature.

[0026] In accordance with alternative embodiments, the weft yarns can be formed with fibers that incorporate phase change materials (PCMs). Such fibers may be referred to as phase change material fibers or PCM fibers. The PCMs are microencapsulated to be enclosed in a polymer shell and the microencapsulated PCMs are embedded into the fiber. This encapsulation process makes the PCM fibers quite durable. The PCM fiber can absorb, store and release heat for optimal thermal comfort. The PCM fibers may be formed into spun or filament yarns. Furthermore, the weft yarns may be blended yarns that include the phase change fibers and cotton fibers. Such blended yarns include about 40 to about 80% by weight of phase change fibers. For example the blended yarns include about 40, 45, 50, 55, 60, 65, 70, 75, or 80% by weight of phase change fibers. The blended yarns also include about 20 to about 60% by weight of cotton fibers. For example, the blended yarns include about 40, 45, 50, 55, or 60%, by weight of cotton fibers. In one example, the blended yarns include about 60% by weight phase change fibers and about 40% by weight cotton fibers. Phase change fibers are Outlast fibers, available from Outlast Technologies LLC. In one example, yarns including PCM fibers may have a count of about 10 to about 60 Ne. The yarn count can be about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, or 60 Ne. In another example, the PCM yarns have a count of about 14 Ne. In another example, the PCM yarns have a count of about 20 Ne. In another example, the PCM yarns have a count of about 30 Ne. In another example, the weft PCM yarns have a count of about 40 Ne. In another example, the weft PCM yarns have a count of about 60 Ne.

[0027] Shawls formed using the phase change yarns are constructed so that the phase change yarns comprise about 55 to about 65% by weight of the overall weight of the shawl. For example, the phase change yarns comprise about 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, or 65%, by weight of the overall weight of the shawl. Such a shawl containing the PCM yarns has the ability to continually regulate skin’s microclimate. As the skin gets hot, the heat is absorbed, and as it cools, that heat is released.

[0028] Regardless of which thermoregulation component is used, the weft yarns have a range of counts for the yarn types and fibers used as described above. For instance, the weft yarns can have count of about 10 to about 106 Ne. For example, the yarn count is about 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, or 110 Ne. In one example, the weft yarns have a count of about 10 Ne. In another example, the weft yarns have a count of about 14 Ne. In another example, the weft yarns have a count of about 20 Ne. In another example, the weft yarns have a count of about 24 Ne. In another example, the weft yarns have a count of about 30 Ne. In another example, the weft yarns have a count of about 40 Ne. In another example, the weft yarns have a count of about 50 Ne. In another example, the weft yarns have a count of about 60 Ne. In another example, the weft yarns have a count of about 70 Ne. In another example, the weft yarns have a count of about 80 Ne. In another example, the weft yarns have a count of about 90 Ne. In another example, the weft yarns have a count of about 106 Ne. In addition, the weather yarns can be plied yarns. In one example, the natural fiber weft yarn is 2-ply yarn. In another example, the weft yarns are a 3-ply yarn.

[0029] Turning to FIG. 3, a method of making a textile article according to an embodiment of the disclosure is illustrated. The method 200 includes yarn formation steps 210 for warp and weft yarns. Yarn formation 210 for the warp yarns can include staple yarn formation or spinning 212 and filament yarn formation 214 (where applicable). Staple yarn formation 212 may utilize any number of yarn formation systems and sub-systems. For instance, staple yarn formation may include bale opening, carding, optionally combing, drafting, roving, and yarn spinning (yarn spinning processes are not illustrated) to the desired count and twist level. In some cases, the warp yarns can be plied into 2-ply, 3-ply, or 4-ply configurations.

[0030] After yarn spinning, the warp yarns are wound into the desired yarn packages for the warping step 220. In one example, ring spinning is the preferred spinning system. However, the warp yarns can be formed using open end spinning systems or rotor spun spinning systems. Furthermore, the spinning system may include methods to form the HygroCotton®, as disclosed in the 075 patent. The 075 patent is incorporated by reference into present disclosure. The filament formation forms continuous filament yarns. During filament formation, polymer resins (such as PET, PLA, and PP) are melted and extruded through orifices at temperatures that approach the polymer melting temperature (Tm). From the orifices, the filaments may be slightly tensioned by passing over one or more godets before being wound onto desired yarn packages. Additional bulking or texturizing steps may be included to increase the bulk and impart “false twist” to the yarns.

[0031] During yarn formation 210, the weft yarns may be formed with similar fiber types and using the same or similar yarn spinning systems used to form the warp yarns. As needed, the weft yarns may be plied in 2-ply, 3-ply, or 4-ply configurations. Following weft yarn spinning, the weft
winding step 222 prepares wound packages of weft yarns. The wound packages are then staged for weft insertion during fabric formation steps discussed further below.

[0032] A warping step 220 follows the yarn formation step. 210. The warping step 220 is where warp yarn ends are removed from their respective yarn packages, arranged in a parallel form, and wound onto a warp beam. The warping 220 also includes a sizing step where a sizing agent is applied to each warp yarn to aid in fabric formation. The warping step 220 results in a warp beam of warp yarns prepared for weaving. The warp beam can be positioned on a mounting arm of a weaving loom so that the warp yarns can be drawn through the loom components, as further described below.

[0033] Continuing with FIG. 3, following the warping step 220, a weaving step 240 forms a woven fabric using a weaving loom. More specifically, in the weaving step 240, the warp yarns are drawn-in (not shown, but contemplated) through various components of a weaving loom, such as drop wires, heddle eyes attached to a respective harness, reed, and reed dents, in a designated order as is known in the art. After drawing-in is complete, the weaving step 240 proceeds through a formation phase. The formation phase creates shed with the warp yarns so that the weft or picks can be inserted through across the width direction of the machine to create the desired woven fabric construction. For instance, shedding motions can include cam shedding, dobby shedding, or jacquard shedding motions, each of which can cause the selective raising and lowering of warp ends to create an open shed for weft insertion.

[0034] During the formation phase of weaving step 240, weft yarns are interwoven with the warp yarns to define the woven design constructions. Exemplary woven structures include, but are not limited to, satins (e.g. satins, 4/1 satin, 4/1 satin base pique texture, 4/1 satin & sateen reversible stripe, 4/1 satin jacquard weave, 4/1 satin base stripe, 4/1 satin swiss dot, 4/1 down jacquard, 5/1 satins, 6/1 satins, and 3/1 satins), 1x1 plain weave, basket weaves, 2x2 rib weave, 2x2 rib weave, or 3x1 rib weave, and twill weaves. The formation phase can utilize different weft insertion techniques, includes air-jet, rapier, or projectile type weft insertion techniques. The weaving step 240 can further include weaving one or more selvage edges along a length L of the woven fabric.

[0035] The weaving step 240 can form woven fabrics having any number of different fabric constructions. The weaving step 240 can form woven fabrics to include about 10 to about 100 warp ends/cm (EPC), preferably about 20 and about 80 EPC. For example, the EPC is about 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100. In one example, the woven fabric has about 20.4 EPC. In another example, the woven fabric has about 40 EPC. In another example, the woven fabric has about 68 EPC. In another example, the woven fabric has about 80 EPC. In another example, the woven fabric has about 100 EPC.

[0036] The weaving step 240 can form woven fabrics to include about 10 to about 80 picks/cm (PPC). For example, the PPC is about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, or 80. Preferably, the pick density is about 15 to about 45 PPC. The woven fabric can be manufactured using multiple picks, such as 2 picks, 3 picks, or 4 or more picks inserted through the shed in a single pick insertion event. For instance, a group of weft yarns can be inserted across the shed in a single pick insertion event during weaving. In another example, the woven fabric has about 19.6 PPC (with multiple pick insertion, such as 4 picks). In another example, the woven fabric has about 20.4 PPC (with multiple pick insertion, such as 4 picks). In another example, the woven fabric has about 27.5 PPC (multiple pick insertion, such as 4 picks). In another example, the woven fabric has about 29 PPC (with multiple pick insertion, such as 4 picks).

[0037] Following weaving step 240, the woven fabric passes through desizing and bleaching step 250. Desizing may be accomplished with as is typical with enzymes or other type of desizing agents. Bleaching may include typical bleaching agents, such as hydrogen peroxide. Step 250 may include singeing the fabric.

[0038] Next, an optional printing step 260 applies a design on the face of the woven fabric. The printing step 260 initiates with a preparation step that includes padding the woven fabric with a paste containing, e.g., sodium alginate and alkali, at a typical WPU and utilizing typical concentrations. After padding the sodium alginate and alkali onto the woven fabric, a digital printer prints a design the fabric using reactive inks or dye stuffs. After printing, the printed woven fabric is steamed and washed. The steaming and washing steps remove the printing gums and any unfixed dye stuffs.

[0039] After printing step 260, the fabric is assembled into the article step 280. As illustrated, the assembly step 280 includes cutting the woven fabric as needed. Following cutting, additional edge binding or a hem, such as hem stitching can optionally be applied to finish the cut edges.

[0040] After the cutting step, a packaging step 290 places the shawl in suitable packaging for shipment.

[0041] Tables 1-6 below illustrate exemplary fabrics used create the shawls as described herein. The examples should not be considered limiting.

**TABLE 1**  
**Example 1**

<table>
<thead>
<tr>
<th>Weave</th>
<th>Satin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warp Yarns</td>
<td>Ring Spun, 60Ne., 70% by weight Cotton/30% by weight silk</td>
</tr>
<tr>
<td>Warp End Density</td>
<td>175 ends/inch (68 ends/cm)</td>
</tr>
<tr>
<td>Weft Yarns</td>
<td>Thermoregulation Yarn, 75 denier, Celliant fibers</td>
</tr>
<tr>
<td>Weft Density</td>
<td>29 PPC, 4 pick insertion</td>
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</tbody>
</table>

**TABLE 2**  
**Example 2**

<table>
<thead>
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<th>Weave</th>
<th>Satin</th>
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<tbody>
<tr>
<td>Warp Yarns</td>
<td>Ring Spun, 60Ne., 70% by weight Cotton/30% by weight silk</td>
</tr>
<tr>
<td>Warp End Density</td>
<td>180 ends/inch (70.8 ends/cm)</td>
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<tr>
<td>Weft Yarns</td>
<td>Ring Spun, 20Ne., 60% by weight outlast/40% by weight cotton</td>
</tr>
<tr>
<td>Weft Density</td>
<td>27.5 PPC, 4 pick insertion</td>
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**TABLE 3**  
**Example 3**

<table>
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<th>Weave</th>
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<tr>
<td>Warp Yarns</td>
<td>Ring Spun, 60Ne., 70% by weight Cotton/30% by weight silk</td>
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TABLE 3-continued

<table>
<thead>
<tr>
<th>Example 3</th>
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<tbody>
<tr>
<td>Warp End Density</td>
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<tr>
<td>Weft Yarns</td>
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<tr>
<td>Weft Density</td>
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TABLE 4

<table>
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<tr>
<th>Example 4</th>
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<td>Weave</td>
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<td>Warp Yarns</td>
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<tr>
<td>Warp End Density</td>
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<tr>
<td>Weft Yarns</td>
</tr>
<tr>
<td>Weft Density</td>
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</tbody>
</table>

TABLE 5

<table>
<thead>
<tr>
<th>Example 5</th>
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</thead>
<tbody>
<tr>
<td>Weave</td>
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<tr>
<td>Warp Yarns</td>
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<tr>
<td>Warp End Density</td>
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<tr>
<td>Weft Yarns</td>
</tr>
<tr>
<td>Weft Density</td>
</tr>
</tbody>
</table>

TABLE 6

<table>
<thead>
<tr>
<th>Example 6</th>
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</thead>
<tbody>
<tr>
<td>Weave</td>
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<tr>
<td>Warp Yarns</td>
</tr>
<tr>
<td>Warp End Density</td>
</tr>
<tr>
<td>Weft Yarns</td>
</tr>
<tr>
<td>Weft Density</td>
</tr>
</tbody>
</table>

[0042] While the disclosure is described herein using a limited number of embodiments, these specific embodiments are not intended to limit the scope of the disclosure as otherwise described and claimed herein. The precise arrangement of various elements and order of the steps of articles and methods described herein are not to be considered limiting. For instance, although the steps of the methods are described with reference to sequential series of reference signs and progression of the blocks in the figures, the method can be implemented in a particular order as desired.

What is claimed:

1. A shawl article configured for thermoregulation, the shawl article comprising:

- an elongate panel having a first end, a second end spaced from the first end along a first direction, and opposed side edges spaced apart with respect to each other along a second direction that is perpendicular to the first direction, the elongate panel including a plurality of warp yarns that extend along the first direction, and a plurality of weft yarns interwoven with the plurality of warp yarns along the second direction so to define a woven fabric,
- the plurality of warp yarns including at least cotton fibers, the warp yarns having a yarn count of about 40 Ne to about 100 Ne,
- the plurality of weft yarns comprising thermoregulation yarns, wherein the thermoregulation yarns comprise at least about 50% by weight of the shawl.

2. The textile article of claim 1, wherein the thermoregulation yarns includes fibers, active materials, or combinations thereof embedded therein that absorb body heat when the shawl is worn.

3. The textile article of claim 1, wherein the warp yarns are blended yarns comprising cotton and silk fibers.

4. The textile article of claim 3, wherein the blended yarns include about 50% to about 80% by weight cotton fibers, and about 20% to about 50% by weight silk fibers.

5. The textile article of claim 4, wherein the blended yarns include about 70% by weight cotton fibers and about 30% by weight silk fibers.

6. The textile article of claim 1, wherein the weft yarns are blended weft yarns comprising cotton and rayon fibers.

7. The textile article of claim 6, wherein the blended yarns include about 20% to about 60% cotton fibers, and about 40% to about 80% rayon fibers.

8. The textile article of claim 7, wherein the blended yarns include about 40% by weight cotton fibers and about 60% by weight rayon fibers.

9. A shawl article configured for thermoregulation, the shawl article comprising:

- an elongate panel having a first end, a second end spaced from the first end along a first direction, and opposed side edges spaced apart with respect to each other along a second direction that is perpendicular to the first direction, the elongate panel including a plurality of warp yarns that extend along the first direction, and a plurality of weft yarns interwoven with the plurality of warp yarns along the second direction so to define a woven fabric,

- wherein the plurality of warp yarns comprise cotton fibers and have a yarn count of about 40 Ne to about 100 Ne,

- wherein the plurality of weft yarns comprise phase change yarns and comprise at least about 50% by weight of the shawl.

10. The textile article of claim 9, wherein the phase change yarns include fibers and phase change materials embedded in the fibers, the phase change yarns configured to absorb body heat when the shawl is worn.

11. The textile article of claim 9, wherein the warp yarns are blended yarns comprising cotton and silk fibers.

12. The textile article of claim 11, wherein the blended yarns include about 50% to about 80% by weight cotton fibers, and about 20% to about 50% by weight silk fibers.

13. The textile article of claim 12, wherein the blended yarns include about 70% by weight cotton fibers and about 30% by weight silk fibers.

14. The textile article of claim 1, wherein the weft yarns are blended weft yarns comprising cotton fiber and rayon fibers.

15. The textile article of claim 14, wherein the blended yarns include about 20% to about 60% by weight cotton fibers, and about 40% to about 80% by weight rayon fibers.

16. The textile article of claim 15, wherein the blended yarns include about 40% by weight cotton fibers and about 60% by weight rayon fibers.
17. A shawl article configured for thermoregulation, the shawl article comprising:

an elongate panel having a first end, a second end spaced from the first end along a first direction, and opposed side edges spaced apart with respect to each other along a second direction that is perpendicular to the first direction, the elongate panel including a plurality of warp yarns that extend along the first direction, and a plurality of weft yarns interwoven with the plurality of warp yarns along the second direction so to define a woven fabric,

the plurality of warp yarns comprising a blend of rayon and wool fibers, the warp yarns having a yarn count of about 10 Ne to about 40 Ne,

the plurality of weft yarns comprising phase change yarns, wherein the phase change yarns comprise at least about 50% by weight of the shawl.

18. The textile article of claim 17, wherein the phase change yarns include fibers and phase change materials embedded in the fibers, the phase change yarns configured to absorb body heat when the shawl is worn.

19. The textile article of claim 17, wherein the phase change yarns include a blend of phase change fibers and cotton fibers.

20. The textile article of claim 19, wherein the phase change yarns include about 20% by weight to about 60% by weight phase change fibers, and about 40% by weight to about 80% by weight cotton fibers.

21. The textile article of claim 20, wherein the blended yarns include about 40% by weight phase change fibers and about 60% by weight cotton fibers.

22. The textile article of claim 17, wherein the warp yarns include about 20% to about 60% by weight rayon fibers, and about 40% to about 80% by weight wool fibers.

23. The textile article of claim 22, wherein the blended yarns include about 40% by weight rayon fibers and about 60% by weight wool fibers.

24. A method of manufacturing a shawl article, the method comprising:

weaving a plurality of warp yarns with a plurality of warp yarns to define a woven fabric, wherein the warp and the weft yarns include a count of about 10 Ne to about 106 Ne, wherein the weft yarns include thermoregulation components, such that at least 50% by weight of the woven fabric includes thermoregulation components; and

forming the woven fabric into the shawl article.

25. The method of claim 24, wherein the thermoregulation components are one of: a) thermoregulation fibers that include active materials embedded in the fibers, or b) fibers with phase change materials embedded therein.

26. The method of claim 24, further comprising printing a design onto a face of the woven fabric.

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