Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2599102 A1 2006/09/14

(21) 2 599 102

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(86) Date de dépôt PCT/PCT Filing Date: 2006/03/03
(87) Date publication PCT/PCT Publication Date: 2006/09/14
(85) Entrée phase nationale/National Entry: 2007/08/24
(86) N° demande PCT/PCT Application No.: US 2006/007754
(87) N° publication PCT/PCT Publication No.: 2006/096567
(30) Priorité/Priority: 2005/03/04 (US60/658,493)

(51) Cl.Int./Int.Cl. *D06C 7/02* (2006.01), *D03D 15/08* (2006.01), *D04B 1/18* (2006.01)

(71) Demandeur/Applicant:
DOW GLOBAL TECHNOLOGIES INC., US

(72) Inventeurs/Inventors:
GAO, TONG, SG;
LORA LAMIA, ALBERTO, IT

(74) Agent: SMART & BIGGAR

(54) Titre : TISSU EXTENSIBLE LAVABLE EN LAINE A STABILITE DIMENSIONNELLE
(54) Title: WASHABLE WOOL STRETCH FABRICS WITH DIMENSIONAL STABILITY

(57) Abrégé/Abstract:
The present disclosure is directed to washable wool stretch or elastic textile articles which are dimensionally stable. Preferably, the articles are characterized in that they have not been subjected to temperatures greater than 1600C. The disclosure is also directed to a method to make dimensionally stable wool stretch articles characterized by the absence of a traditional heat-setting step.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 September 2006 (14.09.2006)

PCT

(10) International Publication Number
WO 2006/096567 A1

(51) International Patent Classification:
D06C 7/02 (2006.01) *D03D 15/08* (2006.01)
D04B 1/18 (2006.01)

(21) International Application Number:
PCT/US2006/007754

(22) International Filing Date: 3 March 2006 (03.03.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/658,493 4 March 2005 (04.03.2005) US

(71) Applicant *(for all designated States except US)*: **DOW GLOBAL TECHNOLOGIES INC.** [US/US]; Washington Street, 1790 Building, Midland, Michigan 48674 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **GAO, Tong** [SG/SG]; 341 Upper Bukit Timah Road, #09-06 The Hillside, Singapore 588195 (SG). **LORA LAMIA, Alberto** [IT/IT]; Fr. Cereje 33, I-13835 Trivero (IT).

(74) Agent: **HOPPE, James, T.**; The Dow Chemical Co., 2030 Dow Center, Midland, Michigan 48674 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2006/096567 A1

(54) Title: WASHABLE WOOL STRETCH FABRICS WITH DIMENSIONAL STABILITY

(57) Abstract: The present disclosure is directed to washable wool stretch or elastic textile articles which are dimensionally stable. Preferably, the articles are characterized in that they have not been subjected to temperatures greater than 1600C. The disclosure is also directed to a method to make dimensionally stable wool stretch articles characterized by the absence of a traditional heat-setting step.

WASHABLE WOOL STRETCH FABRICS WITH DIMENSIONAL STABILITY

The present invention relates to machine washable wool stretch fabrics having good dimensional stability. The fabrics also have improved heat-setting properties. In one aspect, the invention relates to stretch fabrics comprising wool fibers together with elastic fibers where the elastic fibers comprise crosslinked, heat-resistant elastic fibers, and where such fabric does not need heat setting, but the finishing fabric can deliver very good dimensional stability after many washes.

Fabrics made at least in part from wool fibers are well known in the art. It is also known that these fabrics may shrink or otherwise become distorted during wet processing of the fabric or as a result of consumer use and care. Wool is composed of an outer layer of overlapping scales surrounding an internal core composed of numerous long thin spindle shaped cells, largely composed of keratin. The outer layer is generally only one scale in thickness, except at the overlapping portion where one scale ends and another commences. The scales all generally point outwards along the fiber, towards the tip. It is believed that this structure leads to shrinkage during normal wet washing, as the profile of the fibers favors movement in the direction of the root end of the fiber. This behavior can be compared to a ratchet mechanism in that the relative movement is unidirectional. The fibers get more and more compacted until they are completely compacted and a wool "felt" is formed. Felting has been reported to increase in the presence of water, particularly in conjunction with mechanical agitation.

In order to combat the shrinkage, chemical treatments have been used to peel off the outer scales of the wool. Once the scales are removed, then the "felting" phenomenon is eliminated and shrinkage is minimized. The various chemical treatments currently used are generally done on the wool top, and include various chlorine treatments, potassium permanganate treatments in conjunction with hypochlorite (see GB 569,730), sodium sulfate treatments (sometimes referred to as the International Wool Secretariat Process), oxidase or peroxidase treatments (see US 5,980,579) and permonosulfuric acid treatments. It has also been suggested that permonosulfuric acid treatments can be on a finished garment made from a wool fabric in order to control dimensional stability. These treatments have produced fabrics and garments which can be labeled "Machine Washable" or "Total Easy Care" which indicates that the garments are suitable for domestic machine-washing using

the approved Woolmark cycle (wool wash or 40°C gentle cycle) with a bleach and enzyme-free detergent.

Garments are said to be Machine Washable if they meet the following industry standard:

Garment/fabric dimensional stability:

dimensional stability following washing of less than ± 3 percent (washing can be done according to modified ISW Tm 31: 5 cycles of ISO 6330 5A wash, wet measurement)

dimensional stability following steam pressing according to ISO 3005 of less than ± 3 percent

While machine washable wool garments exist, they do not currently contain elastic fiber to help provide stretch to the fabric. Stretchable garments have been gaining in popularity within the fashion industry. Spandex fiber has been used with wool to make a stretchable wool fabric but such fabric is not considered washable because they do not possess suitable dimensional stability. Further, the chemical treatments such as the chlorine and permonosulfuric acid treatments described above are believed to be too harsh for spandex, which would result in unacceptable levels of spandex fiber breakage, therefore limiting the process flexibility in that the chemical treatments should be performed in the absence of the spandex fiber.

Additionally, the dimensional instability manifests itself even before the fabric is exposed to water exposure as wool/spandex fabrics are reported to have very poor consistency in fabric width as indicated by varying widths between different rolls of fabric or variation of width within the same roll of fabric.

To overcome these issues, current fabric producers desiring to use a wool/spandex fabric will typically apply one or more additional heat setting processes at high temperatures in order to "fix" the fabric width and adjust the fabric width to within the desired range.

Heat-setting is a common way of reducing or eliminating the dimensional instability. The heat-setting process typically involves passing the fabric through a heating zone for a time and at a temperature that resets the synthetic fiber's morphology memory to the dimensions of the fabric at the time when the heat-setting process was applied. The time and temperature needed for the heat treatment depend on factors such as the fabric construction, the weight of the fabric, other fibers present in the fabric, the type of synthetic fiber, and the previous heat history of the synthetic fiber. The issue of dimensional

instability is especially pronounced for stretch woven fabrics, particularly knitted stretch fabrics.

For stretch fabrics, such as those incorporating spandex, typical heat-setting conditions are from 180°C to 210°C for 15 to 90 seconds. These relatively harsh conditions may negatively affect the tenacity of companion fibers and lead to fabric color alteration. Furthermore, the heat-setting step is typically an additional step which adds expense to the fabric production process. The finished wool/spandex fabrics are reported to have very poor consistency in fabric width as indicated by varying widths between different rolls of fabric or variation of width within the same roll of fabric. The heat setting process will cause the finishing fabric stretch level to be inconsistent.

Accordingly it would be desirable to have a dimensionally stable wool fabric containing elastic fibers which did not require a special heat-setting step, such that the heat-setting could be accomplished simultaneously with other steps in the fabric production process.

The present invention is accordingly directed to wool fabrics which incorporate stretch or elastic fibers, which fabrics retain their dimensional stability, preferably without the need for traditional heat setting steps. The present disclosure is also directed to a method of producing wool stretch fabrics having good dimensional stability wherein the method is characterized by a chemical treatment to remove wool scales and further characterized by the absence of any step in the production process which is performed at a temperature of 160°C or above. The stretch fabrics may also include other fibers including cellulosic, more preferably synthetic ones, including polyolefin such as polyethylene and/or polypropylene, polyester, polyamide, and segmented polyurethane fibers. The finished stretch fabrics preferably have a dimensional stability of less than ±5 percent, more preferably less then ±3 percent, still more preferably within ±2.0 percent and most preferably within ±1.5 percent. Dimensional stability values indicated in this invention refer to the difference between the finished fabric length and widthwise dimensions after vs. before laundering plus tumble drying as defined by AATCC135-1987; preferably by drying method: A – tumble drying. Negative values indicate that the final washed dimensions are shorter than the initial ones which translates to shrinkage.

The present invention also relates to fabrics which can be characterized by consistent stretching at 9 percent-30 percent according to testing method IWS TM 179. The present

invention also can be characterized in that the finished fabric color is free from discernable yellowing.

The machine washable wool stretch fabrics of the present invention comprise at least wool fibers and elastic fibers. The wool fibers of the present invention can be any type of wool fiber used in the garment industry. Typically the wool used will be the fiber from the fleece of sheep or lambs but also includes fiber from the hair of Angora or Cashmere goats, camels, alpacas, llamas, vicunas and Angora rabbits, for example. The wool can be present in any amount, but 20-99 percent by weight is most preferred. Depending on the desired application it may be desirable to have at least 35 percent, 50 percent, 60 percent, or even 70 percent wool and similarly, the application may dictate having less than 98 percent, 97 percent, 96 percent, 95 percent, 80 percent, 75 percent or 70 percent wool.

Whatever the source, the wool fibers in their natural state can be characterized by having scales that tend to ratchet down and to interlock with each other thereby binding the fibers together in a process called felting. Accordingly, the wool fibers for use in the present invention are treated to remove at least a portion of the scales. This treatment process is generally known in the art, and any such processes may be used in the present invention. Typical processes include chlorine treatment and permonosulfuric acid treatment. Examples of potential chemical treatments for use in the present invention include those described in US 5,980,579, WO2005/005710, EP 0 687 764, US 5,571,286, US 5,755,827 and WO 9502085, which are each hereby incorporated by reference in their entirety.

The scale removing treatment can be done at any step in the process to make a garment. For example, in many cases it will be most advantageous to remove the scales as a first step so that felting will not occur during any of the later production processes, but in other situations, it may be beneficial to wait until the final garment has been prepared and then treat the whole garment in order to remove at least a portion of the scales from the wool fibers. The treatment may also be done at intermediate steps such as after forming the sliver, the top, the roving, the yarn (including elastic yarns if combined with elastic fiber), or after making the fabric. Typically the treatment is done on the top or on the finished garment.

The machine washable fabrics and garments of the present invention are stretch or elastic, which for the purposes of this invention, means that they contain an elastic fiber.

For purposes of the present invention an elastic fiber is one that will recover at least about 50 percent, more preferably at least about 60 percent even more preferably 70 percent of its stretched length after the first pull and after the fourth to 100 percent strain (double the length). One suitable way to do this test is based on the one found in the International Bureau for Standardization of Manmade Fibers, BISFA 1998, chapter 7, option A. Under such a test, the fiber is placed between grips set 4 inches apart, the grips are then pulled apart at a rate of about 20 inches per minute to a distance of eight inches and then allowed to immediately recover. It is preferred that the elastic textile articles of the present invention have a high percent elastic recovery (that is, a low percent permanent set) after application of a biasing force. Ideally, elastic materials are characterized by a combination of three important properties, that is, (i) a low stress or load at strain; (ii) a low percent stress or load relaxation, and (iii) a low percent permanent set. In other words, there should be (i) a low stress or load requirement to stretch the material, (ii) zero or low relaxing of the stress or unloading once the material is stretched, and (iii) complete or high recovery to original dimensions after the stretching, biasing or straining is discontinued.

Elastic fibers include certain fibers made from polyolefins such as polyethylene or polypropylene, and segmented polyurethane. The elastic fiber for use in the present invention is preferably durable enough to survive the scale removing treatment so that such treatment may be done in the presence of the elastic fiber. It is therefore preferred that the elastic fiber be a cross linked polyolefin fiber, more preferably a cross linked polyethylene fiber, of which cross linked homogeneously branched ethylene polymers are particularly preferred. This material is described in US 6,437,014, (which is hereby incorporated by reference in its entirety) and is generically known as lastol. Such fibers are available from The Dow Chemical Company under the trade name DOW XLA fibers. It is preferred that the elastic fibers comprise from 2 to 20 percent by weight of the article. Depending on the desired application, it may be preferred that the article comprise at least 3, 4, 5, 6, 7, 8, 9, or even 10 percent elastic fiber, and similarly, the desired application may dictate having less than 20, 15, 10, 9, 8, 7 ,6 or 5 percent elastic fiber. It may be desirable for knitted articles to contain relatively more of the elastic fiber than woven articles.

It is also possible, although not necessarily preferred, that more than one type of elastic fiber may be used in the articles of the present invention. It is preferred that the elastic fibers not include fiber made from segmented polyurethane, however, as this material

is likely to degrade under the relatively harsh chemical treatments used for de-scaling and further promotes dimensional instability in the absence of heat setting at temperatures greater than 160°C.

The elastic fibers for use in the present invention can be of any thickness, although 20-140 denier is most preferred, particularly when the fiber is the preferred cross linked homogeneously branched ethylene polymers. Forty denier and 70 denier lastol fiber are especially preferred due to commercial availability. In addition to a monofilament fiber, the elastic fiber may also be a conjugate fiber, for example, a sheath/core bicomponent fiber. The elastic fiber may be used bare, or it may first be incorporated into a multifilament, for example, covered yarn, or into staple fibers, for example, corespun yarn, as is generally known in the art. In a preferred embodiment the elastic fiber is siro spun with the wool to form an elastic wool yarn.

The textile articles of the present invention may further comprise additional non-elastic natural or synthetic fibers. Non-elastic synthetic fibers include those made from materials such as polyester, nylon, polyethylene, polypropylene, and blends thereof. Natural fibers include fibers made from cellulosic materials such as cotton, flax, ramie, rayon, viscose and hemp. Natural fibers from other materials can also be used in the textile articles of the present invention, including fibers such as silk or mohair.

The washable wool stretch fabrics of the present invention can be made by any conventional means. Thus, the articles of the present invention include fabrics which have been woven (where the elastic fiber or yarn can be in the warp direction, the weft direction or both) or knitted, including warp knitting, (for example, Milanese, Raschel and Tricot knitting) weft knitting (for example, circular knitting and flat knitting) and garment knitting technologies such as seamless articles. The type of knitting construction is also not intended to be a limiting factor of the present invention. Known construction types include plain single jersey, single jerseys containing tuck and miss stitches (such as Lapique, Cross-mis 1x1, Lacoste & Plain pique), double jerseys (such as Plain Rib and Plain Interlock), double jerseys containing tuck and miss stitches (such as Milano Rib, Cardigan, Single Pique & Punto di Roma).

Wool fabrics and particularly knitted wool fabrics, are known to suffer from a lack of dimensional stability over home laundering, for example, excessive stretching or shrinkage. Traditional methods for producing knitted fabrics therefore include a heat setting

step, particularly when the fabric includes fibers incorporating synthetic polymers. The heat-setting step is done after knitting and can be done either prior or post dyeing. The heat setting process generally involves applying a biasing force to hold the fabric at its desired dimensions (typically with the use of tenter frames) and subjecting it to high temperatures, particularly temperatures higher than any temperature that the fiber or article is likely to experience in subsequent processing (for example, dyeing) or use (for example, washing, drying and/or ironing). Although not intending to be bound by theory, it is believed that the heat-setting process generally works as follows: The heat-setting temperatures are such that at least some of the crystallites in the fiber will melt. The fabric is then removed from the heat, and the molten portions are allowed to recrystallize, and then the biasing force can be removed. The recrystallization causes the fabric to have a "memory" of the dimensions at which the fabric was maintained during the heat-setting process, even after the biasing force is removed.

It has been discovered that by selecting certain synthetic elastic fibers for use in the knitted fabrics, the heat setting step can be omitted, while still producing a fabric having acceptable dimensional stability. One aspect of the present invention is therefore directed to a method for making a machine washable wool knitted fabric characterized in that the entire process occurs at a temperature less than about 160°C. Depending on the content of other fibers which make up the fabric, even lower temperatures can be used without sacrificing dimensional stability. Thus, the entire process may occur at a temperature of less than 150°C, 140°C, 125°C, 100°C or even 80°C.

In certain embodiments of this invention, the process can further be characterized by an absence of tentering. Thus, yarns or fibers containing at least some elastic material can be knitted into fabric and the fabric can directly be subjected to the desired finishing treatments without the need for placing the fabric into a tenter frame and exposing it to the high temperatures normally associated with heat-setting.

It is preferred that the finishing treatments include at least one step in which the temperature is higher than 80°C. In this way, the fabric will be "fixed" in a similar manner to the typical heat setting process, but at a lower temperature and without the need for special apparatus to ensure a biasing force. Typical finishing steps are conducted at temperatures of 80°C or greater, which is sufficient for this purpose, and yet such fabrics will not normally be exposed to temperatures this high during normal use and care.

The present invention is also directed to machine washable wool textile articles having stretch and dimensional stability. For purposes of the present invention, "textile articles" includes finished fabric as well as products made from the fabric including bed sheets and other linens, and garments. It is preferred that the articles of the present invention, particularly the plain single jersey knit fabrics of the present invention, recover promptly to dimensions which are less than 20 percent over its original dimension after being stretched up to (1) 100 percent widthwise and/or (2) 45 percent lengthwise (all at extension rate of 500 mm/min for a specimen 50 mm wide and gauge length 100 mm). More preferably, the article will return to within 15 percent of the original dimensions, and more preferably to within 10 percent. It should be understood that the amount of stretch and recovery will be a function of the weight of the fabric and the fabric construction. It is also contemplated that the articles of the present invention will have stretch in more that one direction, and indeed for many applications this will be preferred. It is not necessary that the articles have the same amount of stretch in each direction to be within the scope of this invention.

The textile articles of the present invention are dimensionally stable. For purposes of this invention "dimensionally stable" means that the stretch fabrics change less than 5 percent in either direction (growth or shrinking), more preferably less than 3 percent in either direction, and even more preferably less than 2 percent in either direction and most preferably within ± 1.5 percent. Shrinkage is generally perceived as being the typical form of dimensional instability and the fabrics of the present invention will have a dimensional stability higher (that is, less negative) than -5 percent in the width and/or the lengthwise direction. preferably higher than -4 percent, more preferably higher than -3 percent and most preferably higher than -2 percent (with 0 percent representing no shrinkage or growth). Dimensional stability values are calculated by the difference between the finished fabric's length and widthwise dimensions after vs. before laundering. To determine dimensional stability, the length and width of the finished article are measured, then the article is subjected to laundering (such as the method described in AATCC135-1987 drying method: A – tumble drying. After laundering the length and width are measured again, and the percentage is calculated according to the formula: dimensional stability = (new dimension - original dimension)/original dimension. As will be readily understood by one in the art, the

negative values indicate that the final washed dimensions are shorter than the initial ones which translates to shrinkage.

It should be understood that depending on the fibers present in the fabric, some heat setting may be beneficial, even if no such heat setting is required as a result of using the preferred elastic fibers of the present invention. For example, if polyester is present, temperatures around 160°C may advantageously be used to provide dimensional stability to the polyester content only. Even fabrics containing cotton are often exposed to temperatures as high as 140°C in order to dry after wet finishing treatments. Thus, it may be desirable to have a finishing step as high as 140°C for the cotton-containing fabrics of the present invention.

After forming the greige fabric any finishing processes known in the art may be used. This includes processes such as scouring, mercerizing, dyeing and drying. It is preferred that at least one of the finishing processes be conducted at a temperature which is greater than any to which the end consumer will likely expose the garment, for example, 80°C or greater.

EXAMPLES

Example 1: Polyester blend with wool and DOW XLA™ fiber 40D

Wool fiber is chemically treated with a chlorine treatment on the wool top to remove wool scales. This treated wool fiber is then blended with polyester fiber to produce a yarn which is about 65 percent by weight polyester and 35 percent by weight wool. The blended fiber is then dyed. The dyed fiber is then combined with 40 denier DOW XLA™ fiber (available from the Dow Chemical Company) at a draft of 4.3 via siro spinning to produce an elastic yarn. The elastic yarn is used in the weft direction to make a fabric with a warp yarn (the warp yarn is dyed polyester/wool fiber prepared as above, without siro spinning with DOW XLA™ fiber) count (Nm) 52 two ply and a weft yarn count (Nm) 52 two ply having 24 ends/cm and 22.5 picks/cm. The resulting fabric contains about 33 percent by weight wool, 63 percent polyester and 4 percent Dow XLA fiber. The resulting fabric has a weight (as determined by ASTM D3776-1996 (2002)) of 240.7 gm/m^2 (240.7 GSM). The fabric is finished according to standard processes, and measured. The finished fabric exhibits a stretching level of 16 percent as determined according to IWS TM 179. The fabric is subjected to IWS test method 31:5 cycles of ISO 6330 5A Wash, wet measurement. The fabric is then re-measured.

The fabric exhibits weft washing shrinkage (testing method IWS TM 31) of less than 1.9 after 5 washes. As the industry standard for "machine washable" garments is less than 3 percent, this fabric easily meets the industry standard.

Examples 2- 5 wool (Super 100 Superwash wool blend with DOW XLA™ fiber 40D

Super 100 Superwash wool fiber is chemically treated fiber which has been treated with a chlorine treatment on wool top to remove wool scales. The treated wool is then combined with 40 denier DOW XLA™ fiber at a draft of 4.3 via siro spinning to produce the elastic yarn. The yarn is used in the weft direction (the warp was 100 percent wool) to make fabrics with a warp yarn count (Nm) 80 two ply and a weft yarn count (Nm) 76 two ply. The resulting fabric is about 96 percent wool and about 4 percent DOW XLA™ elastic fiber, which may vary depending on the particular weave construction.

A series of different weave constructions as set forth in Table 1 is prepared and the fabrics are dyed and finished according to standard processes. Each had a width of approximately 150 cm. The dimensional stability of these fabrics is tested after 5 cycles of washing according method ISO 6330 5A wash, wet measurement, as in Example 1 (that is, IWS TM31). The fabrics are also tested for dimensional stability following steam pressing according to testing method ISO 3005. The stretch and unrecoverable extension in the weft direction was determined according to IWS TM 179. These examples are summarized in Table I, and as can be seen from the table, all of the examples meet the industry standard for "machine washable".

Table 1

Example No.	weave	Weight (g/m^2)	Dimensional stability after washing warp/weft	Dimensional stability after steam pressing warp/weft	Stretch%	Unrecoverable extension%
2	2/1 Gabardine	290	2.2/-0.9	0.3/0.6	16.5	2.8
3	2/1 Serge	265	2.0/-.02	0.2/0.9	16.5	2.6
4	2/2 Herringbone	300	1.5/-0.2	0.3/1.1	19.3	3.8
5	2/1 Herringbone	265	1.7/0.1	0.3/2.5	17.3	2

WHAT IS CLAIMED IS:

1. A washable wool article comprising elastic fiber comprising cross linked polyolefin polymers, characterized in that such article has a dimensional stability after washing and/or steam pressing within ±3 percent.
2. The article of Claim1 wherein the elastic fibers comprise a cross linked homogeneously branched ethylene polymer.
3. The article of Claim 1 wherein the article has not been subjected to temperatures greater than 160°C.
4. The wool article of Claim 1 which has a dimensional stability after washing and/or steam pressing of ±1.5 percent.
5. The washable wool article of claim 1 wherein the article comprises 2-20 percent by weight elastic fiber.
6. The washable wool article of claim 1 wherein the article comprises at least 65 percent wool.
7. The washable wool article of claim 1 further comprising additional non-elastic natural or synthetic fibers.
8. A method of producing a dimensionally stable washable wool stretch article comprising fiber made from an elastic material, said method characterized in that the temperature during article finishing does not exceed 160°C.
9. The method of Claim 10 further characterized in that the process does not include the use of a tenter frame.
10. The method of Claim 10 further characterized in that the article finishing includes a heat setting step.
11. The method of Claim 10 comprising the step of selecting one or more cross linked polyolefin polymers as the elastic material.
12. The article of Claim 9 wherein the article additionally comprises polyester or nylon fibers.
13. The article of Claim 4 wherein the fiber made from crosslinked homogeneously branched ethylene polymer comprises 2 percent to 10 percent by weight of the article.
14. The article of Claim 1 wherein the article comprises fiber made from polypropylene.
15. The article of claim 1 wherein the article is in the form of a garment.

16. The article of Claim 1 wherein the article is in the form of a linen.

17. The article of claim 1 wherein the article is in the form of finished fabric.

18. A washable wool article comprising elastic fiber and at least 65 percent by weight wool, characterized in that such article has a dimensional stability after washing and/or steam pressing within ±3 percent.

19. The article of Claim 18 where the wool comprises from 70 to 96 percent by weight wool.