Title: KNITTED GLOVE WITH TACKY GRIP COATING

Abstract: Provided are leather-free gloves comprising a seamless knitted glove body and a tacky cured elastomeric coating, where the coating comprises a tackifier. Methods of making and using the same are also provided. The glove body can be knit from a stretchable body yarn. Reinforcement sections can also be provided for areas of high stress such as tips and bases of finger and thumb components and the knuckle area. A flat cuff can also be included.

FIG. 1


Published:
— with international search report (Art. 21(3))
— with information concerning incorporation by reference of missing parts and/or elements (Rule 20.6)
KNITTED GLOVE WITH TACKY GRIP COATING

FIELD

[0001] The present invention relates to knitted gloves and knitted glove liners having a grip that is tacky.

BACKGROUND

[0002] Many sports and occupations require gloves for hand protection. Not only is hand protection important, but dexterity and comfort are needed as well. In addition, certain uses of gloves subject them to extensive wear and movement, which, in turn, create a need for durability, stretchability, and flexibility. Certain applications also require excellent gripping characteristics, such as sports that require skillful and adept ball handling.

[0003] Many prior art gloves have relied on leather, natural or synthetic, to provide a glove body or a gripping surface. For example, US3096523 (Bruchas) provides a football glove that has a leather body and patches of neoprene secured to portions of the palm of the glove. US2907046 (Scherr) provides a glove knitted from a stretch yarn that has a relatively thin pliable leather palm stitched or glued to the glove for wear resistance and grip. US4689832 (Mulvaney) provides a sewn leather glove that has a tackified outer side and a detackified inner side. US20070209097 (Iacullo) provides a football sports glove that is sewn or glued, which places vinyl rubber pads having finlike grippers on the glove material at various locations.

[0004] Lightweight knitted gloves having a polymeric latex layer can be used where there is a need for durability, stretchability, and flexibility. Various lightweight gloves have been provided previously. US20070204381 (WO2007102989) (Thompson), commonly assigned and hereby incorporated by reference, provides a lightweight thin flexible polymer coated glove whose polymeric latex coating penetrates a front portion of a knitted liner half way or more through the liner thickness and for at least a portion of the knitted liner, but not
penetrating the entire thickness. This publication identifies that the liner can be knitted using an 18-gauge needle with 70 to 221 denier nylon 66 multi-filament yarn. In commonly assigned US20090055992 (WO2009032866) (Thompson), hereby incorporated by reference, a lightweight robust thin flexible polymer coated glove is provided. This glove has areas of reinforcement at areas of high stretch and/or movement. Neither of the publications, however, provides a tacky grip coating.

Thus, there is a continuing need for gloves and glove liners that provide excellent grip.

SUMMARY

The present invention relates to gloves and glove liners. Generally, provided are leather-free gloves, each of which comprises a seamless knitted glove body and a tacky cured elastomeric coating. Methods of making and using the same are also provided.

In a detailed aspect, gloves comprise:

- a glove body comprising a plurality of components which comprise four finger components, a thumb component, one or more palm components, and a wrist component, the plurality of components being knit from a stretchable body yarn;
- a plurality of reinforcement sections located at each tip and base of each finger component and of the thumb component and in the at least one palm component, wherein the plurality of reinforcement sections comprise a plaited yarn such that the plaited yarn resides on one surface of stretchable body yarn of the glove body; and
- a tacky cured elastomeric coating dipped onto a palm-side of the glove body such that the coating penetrates less than the entire thickness of the glove body.
DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 shows a glove schematic according to an embodiment of the present invention having nine components;

[0009] FIG. 2 is a photograph of an exemplary glove body;

[0010] FIG. 3 is a photograph of an exemplary glove showing the palm-side;

[0011] FIG. 4 is a photograph of an exemplary glove showing the knuckle-side; and

[0012] FIG. 5 is a photograph of an exemplary crotch portion of a glove body.

DETAILED DESCRIPTION

[0013] Provided are leather-free seamless knitted gloves and glove liners that are durable, stretchable, flexible, and have a tacky grip. Such a grip results from a cured elastomeric coating that contains a tackifier. The present inventors have discovered that an emulsion of a tackifier can be used in conjunction with a rubber latex emulsion in order to provide a composition that knitted liners can be dipped into and coated with. The tackifier is curable and self-crosslinking. Moreover, the tackifier exhibits good cross-linking and bonding with the latex-based material. In one or more embodiments, the tackifier is mixed with the rubber latex emulsion. In other embodiments, the tackifier is dipped separately from the rubber latex and still forms an integral elastomeric coating. The resulting elastomeric coating can be cured, subsequently providing a tacky grip. Moreover, the tacky cured elastomeric coating substantially resists delamination by comprising an integral substrate formed by cross-linking an overcoat layer of the tackifier with an undercoat layer of the cured latex. In one or more embodiments, the tacky grip provides high tack in the absence of water; such tack is lost upon washing/contact with water and regained upon drying.

[0014] Reference to "leather-free" means that no leather, synthetic or natural, is used. "Seamless" means a tubular knit fabric without seams, thus, a seamless knitted glove body
means that the glove body is knit in such a way that no seams are present down the length of
the glove. Seams at the fingertips are necessary for the glove construction, however, and do
not preclude reference to the glove body as being seamless.

[0015] The terms "having tack", "tacky", and "tackiness" all refer to the grip surface that
tends to provide stickiness and adherence upon drying and curing.

[0016] In a preferred embodiment, the tackifier is one or more acrylic polymers. Desirable
tackifiers come in emulsions that are compatible with a desired rubber latex emulsion. Reference to compatible means that one emulsion would not render the other emulsion unstable. In one example, compatibility is achieved by matching pHs.

[0017] Rubber latex emulsions comprise natural rubber latex, synthetic rubber latex, or both. The synthetic rubber latex can comprise synthetic polyisoprene, styrene-butadiene, carboxylated or non-carboxylated acrylonitrile-butadiene, polychloroprene, a water-based polyester-based polyurethane, a water-based polyether-based polyurethane, or combinations thereof.

[0018] In one embodiment, the tacky cured elastomeric coating penetrates less than the entire thickness of the glove body in order to avoid strikethrough to the hand-contacting surface. An exemplary process for achieving such is provided in US20070204381 (WO2007102989) (Thompson), commonly assigned and hereby incorporated by reference.

[0019] The seamless knitted glove body can be formed according to the needs of the application. In this regard, it may be desirable to have gloves formed using variable stitch technology, as set forth in U.S. Patent Nos. 6,962,064; 7,213,419; and 7,246,509, each of which is incorporated herein by reference. The glove body can be formed of more than 1 yarn. For example, a main body yarn having elastic material may be used in conjunction with an elastic-free material. On the other hand, it may be desired to use an elastic-free material
throughout the glove body in conjunction with an elastic-containing yarn. In U.S. Patent Nos. 7,434,422 and 7,555,921, each of which is incorporated herein by reference, a yarn is plaited with other yarns in a glove that uses variable stitch technology. In US20090055992 (Thompson), hereby incorporated by reference, sections of reinforcement are provided to a lightweight glove. In co-pending provisional application 61/173,811, hereby incorporated by reference, knitted gloves having a single layer with a plurality of yarns are provided. The crotch areas of the gloves, that is the areas between any two digits, such as the thumb and first finger, the first and second fingers, the second and third fingers, or the third and fourth fingers, are subject to stress and stretch during use. These areas typically contain at least 2 (or even 3) overlaying stitches of the body yarn to strengthen that area and prevent holes from forming during use. In a detailed embodiment, areas of enhanced reinforcement can be provided in the crotch areas such that at least 4 overlaying stitches are provided between any two digits. In a further detailed embodiment, the stitches are jersey stitches, in which each loop formed in the stitch is substantially identical.

[0020] A detailed embodiment provides that the glove body comprises: a plurality of components which comprise four finger components, a thumb component, one or more palm components, and a wrist component, the plurality of components being knit from a stretchable body yarn. In one or more embodiments, the glove body is provided with a cut-off cuff, such that wrist component extends no further than the base of the palm of the wearer, so as not to interfere with wrist motion.

[0021] Another detailed embodiment provides a plurality of reinforcement sections in the glove body. These sections are located at each tip and base of each finger component and of the thumb component and in the at least one palm component, wherein the plurality of reinforcement sections comprise a plaited yarn such that the plaited yarn resides on one surface
of the stretchable body yarn of the glove body. The plaited yarn can be provided at intervals as needed, such as every 2 courses, every 3 courses, and the like.

[0022] Methods of protecting hands and handling sports equipment comprise: wearing a leather-free sports glove comprising a seamless knitted glove body and a tacky cured elastomeric coating.

[0023] A detailed aspect of the present invention is a glove that comprises:

a glove body comprising a plurality of components which comprise four finger components, a thumb component, one or more palm components, and a wrist component, the plurality of components being knit from a stretchable body yarn;

a plurality of reinforcement sections located at each tip and base of each finger component and of the thumb component and in the at least one palm component, wherein the plurality of reinforcement sections comprise a plaited yarn such that the plaited yarn resides on one surface of stretchable body yarn of the glove body; and

a tacky cured elastomeric coating dipped onto a palm-side of the glove body such that the coating penetrates less than the entire thickness of the glove body.

[0024] The stretchable body yarn comprises materials that permit the yarn to stretch. In one embodiment, this yarn has a core comprising an elastic strand, such as spandex or rubber. A suitable composite yarn is one having an elastic core and one or more coverings around the core. The coverings can be wrapped yarns or they can be fibers that are spun around the core.

Wrapped yarns can comprises nylon, polyester, cotton, or combinations thereof. It may be desirable to use cut resistant yarns containing a para-aramid, an ultrahigh molecular weight polyethylene, or combinations thereof around the core. It is also recognized that the elastic core can be covered by spun fibers such as staple fibers of para-aramid, such as those sold under the trade name Kevlar®.
In one or more embodiments, the stretchable body yarn, the plaited yarn, or both have a denier of 221 or less. In a detailed embodiment, the plaited yarn is elastic-free and comprises nylon, polyester, cotton, or combinations thereof.

As needed, the wrist component can comprise weft-inserted elastic bands. For example, they can be provided every course, every two courses, and the like. One or more embodiments provide that the wrist component comprises two sections such that a first wrist section comprises the stretchable body yarn and a second wrist section comprises a different yarn that is elastic-free. By "different yarn" is it meant that the yarn of the second wrist section is not the same as that in the first wrist section. In a specific embodiment, the different yarn that is elastic-free has a denier of 221 or less and comprises nylon, polyester, cotton, or combinations thereof. A detailed embodiment provides that the second wrist component comprises stitch dimensions that vary as set forth in U.S. Patent Nos. 6,962,064; 7,213,419; and 7,246,509, each of which is incorporated herein by reference.

One or more embodiments provide a cuff, by folding the second wrist component into the glove body and securing it. The cuff can be secured as desired. In a specific embodiment, a flat sewn stitch is used to secure the folded second wrist component.

A detailed aspect provides methods of making gloves comprising:

- knitting a glove body from a stretchable body yarn, the glove body comprising four finger components, a thumb component, one or more palm components, and a wrist component;
- continuously knitting a plurality of reinforcement sections that comprise a plaited yarn such that the plaited yarn resides on one surface of the stretchable body yarn of the glove body, wherein the plurality of reinforcement sections are located at each tip and base of each finger component and of the thumb component and in the at least one palm component;
mounting the glove body onto a former;
dipping the glove body into a coagulant composition;
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dipping the glove body into at least one aqueous emulsion composition
comprising a rubber latex, a tackifier, or both;
forming an elastomeric coating that penetrates less than the entire thickness of
the glove body; and

curing the elastomeric coating to form a tacky cured elastomeric coating.

[0029] In one embodiment, the aqueous emulsion comprises a mixture of both a tackifier and
10 a synthetic latex. Alternatively, the method can further comprise dipping the glove body into a
different aqueous emulsion composition comprising a synthetic latex before dipping the glove
body into the aqueous emulsion composition comprising the tackifier, while forming an
integral coating.

[0030] Turning to the figures, FIG. 1 shows a glove schematic according to an embodiment
of the present invention having nine components. This glove 100 includes nine components,
including each of the finger components 110, 112, 114, and 116, the thumb component 118,
three palm components 104, 106, and 107, and the wrist component which in this embodiment
has two sections, 102a and 102b. Palm component 107 is referred to as a three-fingered palm
since it is attached to only three finger components 112, 114, and 116 (ring, middle, and first).
The presence of palm component 107 permits an ergonomic enhancement to the glove by
20 creating a pinky 110 component that is dropped (that is, a "dropped pinky") as compared to the
rest of the fingers. Palm component 106 is a four-fingered palm since it attaches to the pinky
110 and the three-fingered palm component 107. The wrist component contains two sections,
where a first wrist section 102a continues with a main body yarn of components 110, 112, 114,
116, 118, 104, 106, and 107. A second wrist section 102b is formed starting at 103 from a yarn
that is different from the main body yarn. To form a cuff, the wrist component is folded at 105 into the glove and secured. A flat stitch, for example, can be used to secure the cuff.

[0031] Glove 100 can be knit on a programmable knitting machine to create gloves having variable stitch to achieve an overall shape that accommodates variations in size and shape of individual fingers and hands. These gloves also have zones that are enhanced with reinforcement sections formed from a plaited yarn in areas of high stress such as at the tips and bases of the finger and thumb components and in the knuckle area. Glove 100 can be made, for example, on a SFG knitting machine available from Shima Seiki Mfg., Ltd. based in Wakayama, Japan, where information for stitch setup and number of courses is entered into the knitting machine's operation system using a keypad and LED display. In order to achieve a lightweight knitted glove body, it may be desirable to use 18-guage needles, which typically accommodate yarns of 70 to 221 denier. One main body yarn is used in conjunction with a plaited yarn, as needed. Each of the components of FIG. 1 is formed from courses having a designated stitch setup. A plurality of courses creates a section within the component. The stitch setup indicates how deep the knitting needle penetrates, which in turn creates a desired size of stitch. A lower number indicates less needle penetration and a tighter stitch, while a larger number indicates that the needle penetrates deeper and creates a looser stitch. It may be desirable, for example, to provide a narrow stitch at the finger tips and a slightly larger stitch in the rest of the finger. For example, to knit component 110, which is the pinky finger, a first set of courses has a knitting needle penetration depth set at a first value, which could be a fixed value in the range of 25-35, a second set of courses immediately following the first set has a knitting needle penetration depth set at a larger value than the first value, which could be a fixed value in the range of 26-36. This means that the second set of courses are slightly more
loosely knit than the first set of courses. Tension of the yarns is kept relatively constant during stitching.

[0032] In palm components 104, 106, and 107, the stitch size is constant and typically in the range of 26-36.

[0033] In wrist component, made up of 102a and 102b, where wrist section 102a has a constant stitch size that is generally tighter, smaller than that of the palm components, typically in the range of 24-34. Wrist section 102b contains stitches of different dimensions such that the courses of stitches at 103 where the wrist component is to be folded inward are slightly looser than those before and after. The stitches after the fold are slightly tighter than those before the fold to aid in keeping the cuff snug against the hand.

[0034] FIG. 2 is a photograph of a glove liner 200 that shows areas of reinforcement 202 formed from a plaited yarn that is typically elastic-free. These areas are located at the tips and bases of each finger and the thumb, and in the palm components. An exemplary plaited yarn is a 2/70/34 nylon (2 ply) yarn having a denier of about 140. The main body yarn is shown, for example, in 204. An exemplary main body yarn is stretchable and has a total denier of about 180, having an elastic core (spandex) having a denier of 40 with two wraps of nylon each being 1/70/34 (1 ply each) and each having a denier of about 70. A different yarn can be used in the wrist 206 to provide tailor the fit and feel of the glove body. For example, 206 can be formed of a yarn different from the main body yarn, but it may be desirable to use the same kind of yarn that was used as the plaited yarn.

[0035] FIG. 3 is a photograph of the palm side of a glove 300 having a knitted, leather-free, seamless glove body 320 that was coated by a tacky cured elastomeric coating 310. FIG. 4 is a photograph of the knuckle side of a glove 400 having a knitted, leather-free, seamless glove body 420 that was coated by a tacky cured elastomeric coating 410.
[0036] FIG. 5 is a photograph of an exemplary crotch portions of a glove body, where four stitches of the body yarn (A, B, C, D) overlay the glove body to provide enhanced reinforcement in these areas.

EXAMPLE 1

[0037] A glove in accordance with FIG. 3 was made by knitting a glove body using an 18-guage needed bed from a stretchable body yarn that was 180 denier having an elastic (spandex) core and 2 wraps of nylon to form four finger components, a thumb component, one or more palm components, and a first section of a wrist component. A plaited yarn of 140 denier nylon (2 ply) was simultaneously knit with the stretchable body yarn in every other course in the tips and base of each finger and the thumb and in selected parts of the palm components. A second section of the wrist component was formed from a 140 denier nylon yarn (elastic-free), folded over, and secured to form a cuff.

[0038] The glove body was then mounted onto a former and dipped into a coagulant solution comprising, for example, calcium nitrate coagulating solvent or alcoholic solution or aqueous solution or combinations thereof. Excess of the coagulant was drained from the former, and the former was turned up to distribute the coagulant evenly. The former was then dipped into an aqueous emulsion composition comprising a nitrile synthetic latex, a stabilizer (sodium dodecyl benzene sulfonate sold under the trade name Calsoft®), zinc oxide, black colorant, and thickening agents (a hydrophobically modified polyethylene oxide urethane sold under the trade name Acrysol RM 5000 and an anionic thickener sold under the trade name Acrysol ASE-60). Excess of this composition was drained from the former, and the former was turned up to distribute the composition evenly. The former was then dipped into another aqueous emulsion composition comprising a tackifier made up of acrylic polymers sold under the trade name Carbotac 26222. This composition was drained from the former,
and the former was turned up to distribute the composition evenly. The dipping depth into both aqueous emulsion compositions was chosen to ensure that the resulting coating penetrated the glove body for good adherence but with minimal to no strikethrough to the hand-contacting side. The process variables, which control the penetration of the polymeric latex emulsion include, control of viscosity of the emulsion and control of dip depth in the polymeric latex emulsion tank. Without intending to be bound by theory, hydraulic pressure in the tank of aqueous polymeric latex emulsion also contributes to the depth of penetration.

[0039] The resulting elastomeric coating on the glove body on the former was air dried, then sent to the vulcanization oven to cure it and to form a tacky cured elastomeric coating. The glove was then stripped from the former, stamped with identifying information, and packed for distribution.

EXAMPLE 2

[0040] A glove body was knitted. The glove body was then mounted onto a heated former at 130°F and dipped into a coagulant solution at 104°F, which contained 4% by weight aqueous calcium nitrate solution and 0.25% by weight of a wetting and dispersing agent. Excess of the coagulant was drained from the former, and then the former was turned up to distribute the coagulant evenly.

[0041] The former was then dipped into an aqueous emulsion composition at 70°F, which contained the following ingredients:

100 phr of nitrile synthetic latex (aqueous dispersion of a copolymer of acrylonitrile and 1,3-butadiene, carboxylated, concentration about 45% solids);

1.3 phr a solubilizer (sodium oleic sulfonate sold under the trade name Calsoft®);

2.7 phr zinc oxide;

2.0 phr silver gray pigment;
0.33 phr Michemlube Wax Emulsion;
0.14 phr thickener (hydrophobically modified polyethylene oxide urethane sold under the trade name Acrysol RM 5000);
0.14 an anionic thickener sold under the trade name Acrysol ASE-60;
0.02 phr scent.

[0042] Excess latex emulsion composition was drained from the former, and the former was turned up to distribute the composition evenly.

[0043] The former was then dipped into another aqueous emulsion composition at ambient temperature (70-80°F) containing a tackifier made up of 20-40 % aqueous solution of acrylic polymers sold under the trade name Carbotac 26222. This composition was drained from the former, and the former was turned up to distribute the composition evenly. The glove was then air dried, cured at 200°F, and then stripped from the former.

[0044] Reference throughout this specification to "one embodiment," "certain embodiments," "one or more embodiments" or "an embodiment" means that a particular feature, structure, material, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. Thus, the appearances of the phrases such as "in one or more embodiments," "in certain embodiments," "in one embodiment" or "in an embodiment" in various places throughout this specification are not necessarily referring to the same embodiment of the invention. Furthermore, the particular features, structures, materials, or characteristics may be combined in any suitable manner in one or more embodiments.

[0045] Although the invention herein has been described with reference to particular embodiments, it is to be understood that these embodiments are merely illustrative of the principles and applications of the present invention. It will be apparent to those skilled in the
art that various modifications and variations can be made to the method and apparatus of the present invention without departing from the spirit and scope of the invention. Thus, it is intended that the present invention include modifications and variations that are within the scope of the appended claims and their equivalents.
What is claimed is:

1. A leather-free sports glove comprising a seamless knitted glove body and a tacky cured elastomeric coating.

2. The glove of claim 1, wherein the tacky cured elastomeric coating comprises a tackifier and a rubber latex.

3. The glove of claim 1, wherein the glove body comprises:
   a plurality of components which comprise four finger components, a thumb component, one or more palm components, and a wrist component, the plurality of components being knit from a stretchable body yarn;
   a plurality of reinforcement sections located at each tip and base of each finger component and of the thumb component and in the at least one palm component, wherein the plurality of reinforcement sections comprise a plaited yarn such that the plaited yarn resides on one surface of the stretchable body yarn of the glove body.

4. The glove of claim 1, wherein the glove body comprises at least one crotch comprising at least four stitches of the stretchable body yarn that overlay the glove body to prevent holes from forming.

5. A method of protecting hands and handling sports equipment comprising: wearing a leather-free sports glove comprising a seamless knitted glove body and a tacky cured elastomeric coating.

6. A glove, comprising:
   a glove body comprising a plurality of components which comprise four finger components, a thumb component, one or more palm components, and a wrist component, the plurality of components being knit from a stretchable body yarn;
a plurality of reinforcement sections located at each tip and base of each finger component and of the thumb component and in the at least one palm component, wherein the plurality of reinforcement sections comprise a plaited yarn such that the plaited yarn resides on one surface of stretchable body yarn of the glove body; and

a tacky cured elastomeric coating dipped onto a palm-side of the glove body such that the coating penetrates less than the entire thickness of the glove body.

7. The glove of claim 6, wherein the tacky coating comprises a tackifier and a rubber latex.

8. The glove of claim 6, wherein the tacky coating becomes untacky upon contact with water.

9. The glove of claim 7, wherein the tackifier comprises an acrylic polymer.

10. The glove of claim 7, wherein the rubber latex comprises a synthetic latex that comprises synthetic polyisoprene, styrene-butadiene, carboxylated or non-carboxylated acrylonitrile-butadiene, polychloroprene, a water-based polyester-based polyurethane, a water-based polyether-based polyurethane, or combinations thereof.

11. The glove of claim 6, wherein the tacky cured elastomeric coating substantially resists delamination by comprising an integral substrate formed by cross-linking an overcoat layer of the tackifier with an undercoat layer of the synthetic cured latex.

12. The glove of claim 6, wherein the stretchable body yarn comprises a core comprising an elastic strand.

13. The glove of claim 12, wherein the stretchable body yarn further comprises at least one wrapped strand around the core, the at least one wrapped strand comprising nylon, polyester, cotton, a para-aramid, an ultrahigh molecular weight polyethylene, or combinations thereof.

14. The glove of claim 6, wherein the stretchable body yarn, the plaited yarn, or both independently has a denier of 221 or less.
15. The glove of claim 6, wherein the wrist component comprises two sections such that a first wrist section comprises the stretchable body yarn and a second wrist section comprises a different yarn that is elastic-free.

16. The glove of claim 15, wherein the different yarn that is elastic-free has a denier of 221 or less and comprises nylon, polyester, cotton, or combinations thereof.

17. The glove of claim 15, wherein the second wrist component comprises stitch dimensions that vary.

18. The glove of claim 15, wherein the second wrist component is folded into the glove body and secured with a flat sewn stitch to form a cuff.

19. The glove of claim 6, wherein the glove body comprises at least three crotches each comprising at least four stitches of the stretchable body yarn that overlay the glove body to prevent holes from forming.

20. A method of making a glove comprising:

   knitting a glove body from a stretchable body yarn, the glove body comprising four finger components, a thumb component, one or more palm components, and a wrist component;

   continuously knitting a plurality of reinforcement sections that comprise a plaited yarn such that the plaited yarn resides on one surface of the stretchable body yarn of the glove body, wherein the plurality of reinforcement sections are located at each tip and base of each finger component and of the thumb component and in the at least one palm component;

   mounting the glove body onto a former;

   dipping the glove body into a coagulant composition;

   dipping the glove body into at least one aqueous emulsion composition comprising a rubber latex, a tackifier, or both;
forming an elastomeric coating that penetrates less than the entire thickness of the
glove body; and
curing the elastomeric coating to form a tacky cured elastomeric coating.

21. The method of claim 20, wherein the glove body is first dipped into a first aqueous
emulsion composition that comprises a synthetic rubber latex and then the glove body is next
dipped into a second aqueous emulsion composition comprising the tackifier.

22. The method of claim 20 further comprising forming at least one crotch comprising at
least four stitches of the stretchable body yarn that overlay the glove body to prevent holes
from forming.
**INTERNATIONAL SEARCH REPORT**

**A  CLASSIFICATION OF SUBJECT MATTER**

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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)

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

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

USPTO WEST System (USPGPB.USPT.USOC.EPAB.JPAB), MicroPatent, Google Patents

**C  DOCUMENTS_considered TO BE RELEVANT**

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**D  Further documents are listed in the continuation of Box C**

- *Special categories of cited documents*
  - "A" document defining the general state of the art which is not considered to be of particular relevance
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**Date of the actual completion of the international search**

13 August 2010

**Date of mailing of the international search report**

30 AUG 2010

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