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(54) **THREE-DIMENSIONAL FINGER GLOVE**

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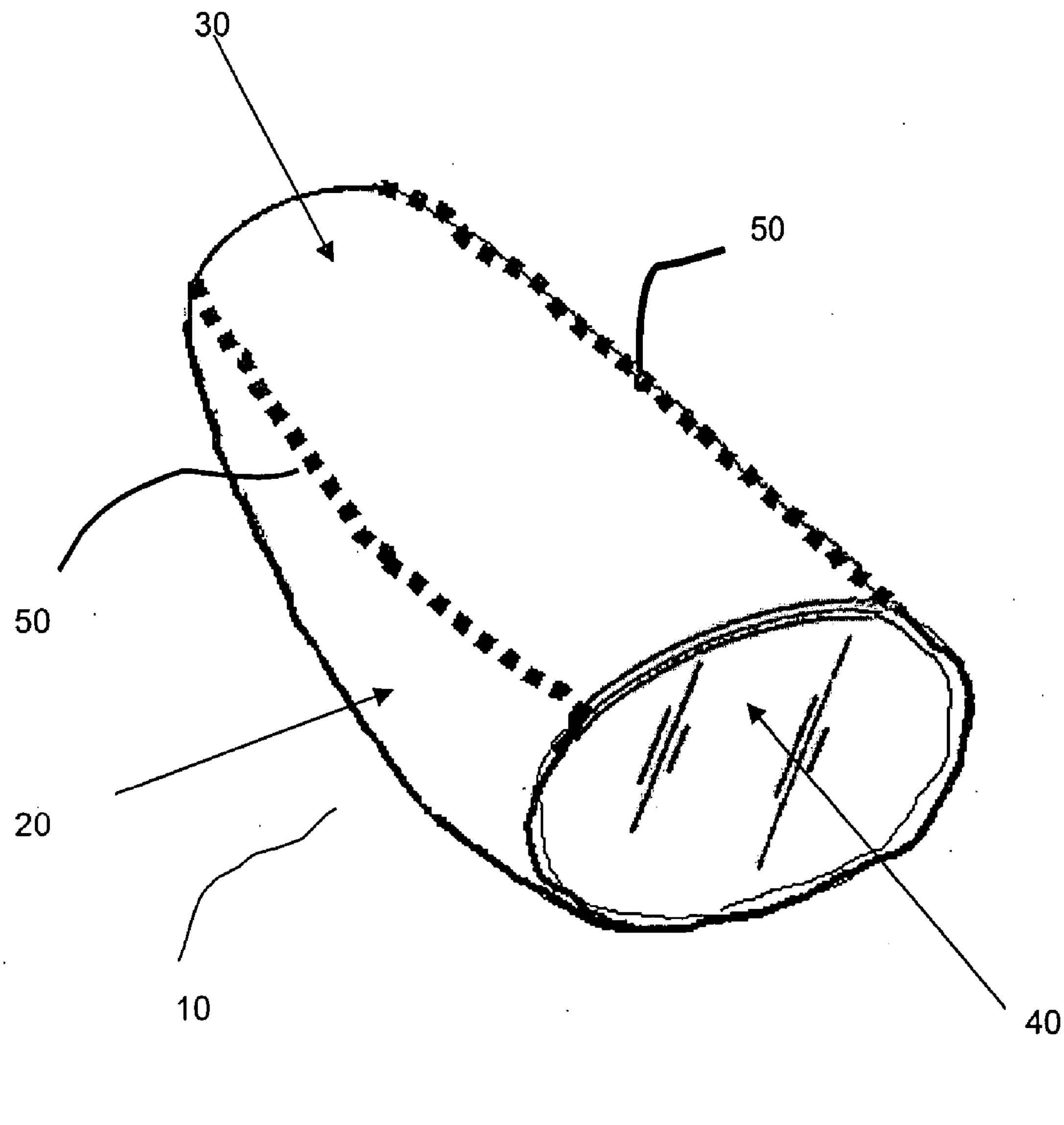
(57) **ABSTRACT**

A 3-D finger glove that may fit onto a human finger is provided. The finger glove that has a 3-D cavity so that it may easily be put on to a finger by a user and is formed by bonding together two nonwoven webs, at least one of which is elastic, while the elastic web stretched. Additionally, the 3-D finger glove successfully prevents the formation of stiff seams along the edge so that seams will not cause abrasion or damage to the areas where the glove is intended to be used. Additionally, the 3-D glove disclosed can have flush seams, which further reduces the stiffness along the seams so that the user feels more comfortable while wearing the glove. Furthermore, the 3-D shaped finger glove may provide a bigger surface area for cleaning or other uses. A number of therapeutic additives may also be applied to the glove.



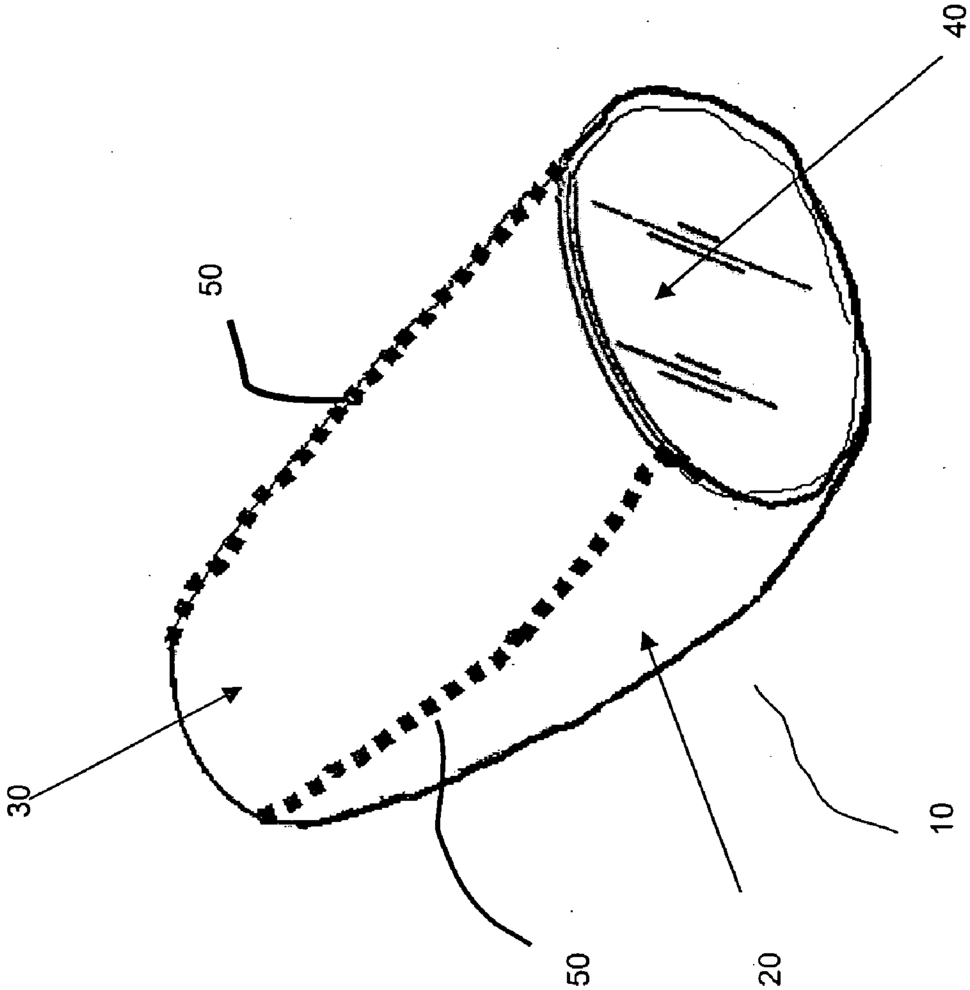


Fig. 1

THREE-DIMENSIONAL FINGER GLOVE

BACKGROUND OF THE INVENTION

[0001] The cut edge or seam line of a nonwoven laminate, especially near bonds, may have some stiffness. In some product applications, such as a finger toothbrush which is used against sensitive body parts, the stiffness may be undesirable because of potential abrasions and cuts. In order to make the seam line soft, the bonded area thus either needs further treatment such as creating microcuts along the seam or performing an "inside-out" process to invert the seam line inside.

[0002] Adding a cutting procedure or an inside-out conversion process inevitably increases the production cost and may make the product(s) economically uncompetitive to manufacture. Additionally, microcuts along the seam may still not be desirable because sharp cuts along the seam may still be able to hurt body parts such as the gums. Microcuts along the seam may create undesirable residues or particles along the seam that they may be transferred into a user's mouth or other body parts. Mechnical cutting may produce solid residues, and a water-knife may contaminate the nonwoven surface, wash out potential therapeutic agents, and also requires a drying step. If a laser cutting tool is used, the stiff seam may form a hard cutting edge because of local burning or melting.

[0003] Accordingly, there is a great need to develop a finger glove with soft seams or without seams along the edge at all.

SUMMARY OF THE INVENTION

[0004] In response to the discussed problems encountered in the prior art, a new, simple and versatile three-dimensional finger glove has been developed. The finger glove is generally formed from a base web material that is shaped into a glove and may contain a pocket for the insertion of a finger. The benefits of a three dimensional finger glove are many: it helps the user insert the finger easier; it pulls two seams away from the edges to one side of the glove so that stiff seams associated with flat finger gloves are not a problem; it allows a user to handle the glove easier; and it allows packaging for continuous use by stacking finger gloves.

[0005] The finger glove may be formed from multiple sections. These multiple sections may be made from different base web materials. In one aspect, for example, a first section, desirably not stretched, may be made from a texturized nonwoven material having an abrasive surface useful for cleaning. A second section, or backing, may be made from an elastic nonwoven material having form-fitting properties to help the glove effectively fit onto a finger. A bonding process involving stretching one of the sections, typically the second, during bonding effectively delivers the desired shape. The 3 D shaped finger glove is formed when a stretched fabric retracts to its normal state. The retraction of the stretched fabric not only helps form the 3-D shape, but also pulls the two seams away from the edges so that the stiffness associated with the bonding edge is partially or fully relieved.

[0006] The 3-D shape may be further defined by the length ratio of the two sections after the stretched fabric retracts to the normal state. The length ratio is about 70 to 90 percent. The ratio may be about 50 to 70 percent. The ratio may be about 25 to 50 percent.

[0007] Any material commonly used in the art to manufacture cloths such as wipes, can be used as a base web. In particular, the base web is typically made from a nonwoven web. More particularly, the base web may be made from pulp fibers, synthetic fibers, thermo-mechanical pulp, or mixtures thereof such that the web has cloth-like properties. The base web may be made from various types of fibers, including meltblown, spunbond, bonded carded, bicomponent, and crimped fibers. The base web may also include various other materials such as elastomeric components or texturized nonwoven materials. Various laminates, such as elastic and film laminates, may also be used in the base web. Suitable elastic laminates include stretch-bonded and neck-bonded laminates (SBL and NBL respectively).

[0008] It should be noted here that the stretchable fabric may be easily replaced by any elastic material that may be bonded to the unstretched fabric. For example, an elastic material may be a latex film, or a transparent or nontransparent polymer film, or the like. Such a finger glove may be desired when the application only requires one side of the glove to be a fabric.

[0009] The finger glove may also include a moisture barrier that is incorporated into or applied as a layer to the base web. In general, a moisture barrier refers to any barrier, layer, or film that is relatively liquid impervious. In particular, the moisture barrier may prevent the flow of liquid through the finger glove so that a finger inserted therein remains dry when the glove is being used. The moisture barrier may remain breathable, i.e., permeable to vapors, such that a finger within the glove is more comfortable. Examples of suitable moisture barriers may include films, fibrous materials, laminates, and the like.

[0010] Various additives may also be applied, if desired, to the finger glove during manufacturing and/or by the consumer. For example, cationic materials, such as chitosan (poly-N-acetylglucosamine), chitosan salts, cationic starches, etc., may be applied to a glove to help attract negatively charged bacteria and deleterious acidic byproducts that accumulate in plaque. Examples of other suitable additives include, but are not limited to, dental agents, such as fluorides, peppermint oil, mint oil and alcohol mixtures; flavoring agents, such as xylitol; anti-microbial agents; polishing agents; hemostatic agents; surfactants; anti-ulcer components; and the like.

[0011] Additives may be applied to the finger glove in the form of an aqueous solution, non-aqueous solution (e.g., oil), lotions, creams, suspensions, gels, etc. When utilized, the aqueous solution may, for example, be coated, saturated, sprayed, or impregnated into the wipe. The additives may be applied asymmetrically. The additives may be less than about 100 percent by weight of the finger glove, and in some aspects, less than about 50 percent by weight of the wipe and particularly less than 10 percent by weight of the finger glove.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] **FIG. 1** is a perspective view of a finger glove.

[0013] Repeat use of reference characters in the present specification and drawings intended to represent the same or analogous features or elements.

DETAILED DESCRIPTION

[0014] Finger gloves as described herein are generally constructed from disposable materials, such as nonwoven webs made from synthetic and/or pulp fibers. For example, when used as an oral cleaning device, the finger glove typically includes a texturized surface adapted to scrub or brush the teeth or gums of a user. Further, the finger glove may also include an elastic component for providing the glove with form-fitting properties. As used herein, the terms "elastic" and "elastomeric" are generally used to refer to materials that, upon application of a force, are stretchable to a stretched, biased length which is at least about 125 percent, or one and one fourth times, its relaxed, un-stretched length, and which will retract at least about 50 percent of its elongation upon release of the stretching, biasing force.

[0015] It has been discovered that by forming a finger glove with an elastic nonwoven material while the elastic layer is stretched results in a glove that snugly fits onto a person's finger so that the glove may more effectively remain on the finger throughout use.

[0016] A finger glove may also remain "breathable" to aid in a person's comfort during use, while also remaining capable of substantially inhibiting the transfer of liquids from the outer surface of the glove to the person's finger. The transfer of liquids may be controlled by using a liquid-impervious material and/or by using a highly liquid-absorbent material.

[0017] The finger glove may be formed from two or more sections of base web material. Each section may be identical or different, depending on the desired characteristics of the finger glove. The finger glove is formed from two sections, wherein one section is formed from a textured nonwoven material and the other section is formed from an elastomeric nonwoven material and is stretched during the bonding process.

[0018] Referring to **FIG. 1**, one aspect of a finger glove is depicted. As shown, the finger glove **10** is made from a first section **20** and a second section **30**. Generally, one section of the finger glove **10** may be bonded or attached to the other section in a finger-shaped pattern according to any manner known in the art, such as by sewing, adhesive, thermal, ultrasonic, or mechanical bonding, so that the connection of the sections may form a pocket **40** for the insertion of a finger. In **FIG. 1**, for example, the first section **20** is attached in a finger-shaped pattern to the stretched second section **30** at their respective outer edges via the seams **50** to form a 3-D finger glove **10** having a pocket **40**. Once each section is bonded or attached at the seams **50**, the materials forming each of the sections **20** and **30** may then be cut adjacent to the seams such that the finger-shaped glove **10** is formed. To form a flush seam, a single cut/seal ultrasonic welding may be used.

[0019] Stretching one of the two webs to be bonded may effectively deliver desired 3-D shape with the retraction of the stretched fabric. The retraction of fabric the second web or section not only forms the 3-D shape, but also pulls the two seams **50** away from the edges so that an arch is formed from the unstretched fabric. The interesting outcome for this unique stretch-bonding process is that the stiffness associated with the bonding edge is partially or fully relieved.

[0020] The 3-D finger glove **10** and size of the 3-D pocket **11** may be further defined by the length ratio of two fabrics A and B after stretched fabric B has retracted to the normal state. The ratio of B to A is desirably about 70 to 90 percent. The ratio may be about 50 to 70 percent. The ratio may be about 25 to 50 percent. Desirably, the stretched fabric is elastic in any direction. More desirably, the stretched fabric has more elasticity at the direction that is perpendicular to the seams **50**.

[0021] To further enhance sealing and reduce the possibility of the seam line opening during glove handling, finger insertion, and during use, a pair of ear-like structures with extra bonding points can be placed at both sides of the opening. The ear-like structure may be made in any shape, but desirably in a shape that may help the user to place the glove onto the finger. The ear-like structures may be of any size, but desirably in a size that will not create stiffness along the seam line. In another related aspect, a finger glove may be created with extra bonding points adjacent to the seam line either at one side of the opening or spaced along the seam line.

[0022] A pull-on tab may also be provided in the middle portion of the finger glove **10** such that a user may the pull the tab in a direction perpendicular to the lengthwise direction of a flattened finger glove. As a result, the tab may facilitate the insertion of a finger into the glove **10** by "spreading out" the glove in an upwardly direction as a finger is inserted therein.

[0023] Although not specifically shown, a finger glove may include bristles on the first section **20** and the second section **30**, particularly when used as an oral cleaning device. Bristles such as described in U.S. Pat. No. 4,617,694 to Bori or U.S. Pat. No. 5,287,584 to Skinner may be utilized. A finger glove **10** may also be provided with a tapered shape to enhance the ability of the glove to fit onto a finger. In addition, a glove **10** may have two open ends so that a finger may be inserted completely through.

[0024] It may also be desirable to provide the finger glove **10** with an additional fastening means. In addition to or alternative to an elastic component, the dental wipe may include a fastening mechanism which may attach to one finger of a user, while the finger glove is fitted onto another finger.

[0025] The finger gloves made are constructed from nonwoven webs containing an elastic component referred to herein as an "elastic nonwoven." An elastic nonwoven is a nonwoven material having non-elastic and elastic components or having purely elastic components.

[0026] The elastic component may form a separate section of the finger glove. The finger glove may be made from two or more sections of material that includes a first section made from a non-elastic material and a second section made from an elastic material. The non-elastic material may be used to brush the teeth, gums, etc. of the user, while the elastic material may be used to ensure that the finger glove fits snugly over the finger of the user. The non-elastic material may be texturized, while the elastic material may have a smooth surface for use in polishing the teeth of the user.

[0027] Alternatively, the finger glove may be made from a single piece of material that contains an elastic component. For example, in this aspect, the elastic component may be a film, strands, nonwoven webs, or elastic filament incorporated into a laminate structure that is well suited to brushing or scrubbing one's teeth. Non-elastic materials used typically include nonwoven webs or films. The nonwoven webs, for instance, may be melt-blown webs, spunbond webs, carded webs, and the like. The webs may be made from various fibers, such as synthetic or natural fibers.

[0028] Synthetic fibers, such as fibers made from thermoplastic polymers, may be used to construct the finger glove. For example, suitable fibers could include melt-spun filaments, staple fibers, melt-spun multi-component filaments, and the like. These synthetic fibers or filaments used in making the nonwoven material of the base web may have any suitable morphology and may include hollow or solid, straight or crimped, single component, conjugate or biconstituent fibers or filaments, and blends or mixtures of such fibers and/or filaments, as are well known in the art.

[0029] The synthetic fibers used may be formed from a variety of thermoplastic polymers. The term "polymer" generally includes, but is not limited to, homopolymers, copolymers, such as for example, block, graft, random, and alternating copolymers, terpolymers, etc., and blends and modifications thereof. Unless otherwise specifically limited, the term "polymer" shall include all possible geometrical configurations of the molecule. These configurations include, but are not limited to, isotactic, synditactic, and random symmetries. The term "blend" means a mixture of two or more polymers.

[0030] Exemplary thermoplastics include, without limitation, poly(vinyl) chlorides, polyesters, polyamides, polyfluorocarbons, polyolefins, polyurethanes, polystyrenes, poly(vinyl) alcohols, caprolactams, and copolymers of the foregoing, and elastomeric polymers such as elastic polyolefins, copolyether esters, polyamide polyether block copolymers, ethylene vinyl acetates (EVA), block copolymers having the general formula A-B-A' or A-B like copoly-(styrene/ethylene-butylene), styrene-poly(ethylene-propylene)-styrene, styrene-poly(ethylene-butylene)-styrene, (polystyrene/poly(ethylene butylene)/polystyrene, poly(styrene/ethylene-butylene/styrene), A-B-A-B tetrablock copolymers and the like.

[0031] As stated above, synthetic fibers added to the base web may also include staple fibers which may be added to increase the strength, bulk, softness and smoothness of the base sheet. Staple fibers may include, for instance, various polyolefin fibers, polyester fibers, nylon fibers, polyvinyl acetate fibers, cotton fibers, rayon fibers, non-woody plant fibers, and mixtures thereof. In general, staple fibers are typically longer than pulp fibers. Staple fibers may increase the strength and softness of the final product.

[0032] The fibers used in a base web may be straight, curled or crimped. The fibers may be curled or crimped, for instance, by adding a chemical agent to the fibers or subjecting the fibers to a mechanical process. Curled or crimped fibers may create more entanglement and void volume within the web and further increase the amount of fibers oriented in the z-direction as well as increase web strength properties. As used herein, the z-direction refers to the direction perpendicular to the length and width of the base web.

[0033] The synthetic fibers added to the base web may also include bicomponent fibers. Bicomponent fibers are fibers that may contain two materials such as but not limited to in a side by side arrangement in a matrix-fibril arrangement wherein a core polymer has a complex cross-sectional shape, or in a core and sheath arrangement. In a core and sheath fiber, generally the sheath polymer has a lower melting temperature than the core polymer to facilitate thermal bonding of the fibers. Commercially available bicomponent fibers include "CELBOND" fibers marketed by the Hoechst Celanese Company.

[0034] Pulp fibers may also be used to construct the finger glove. The pulp fibers used in forming the base web may be soft wood fibers having an average fiber length of greater than 1 mm, and particularly from about 2 to 5 mm based on a length weighted average. Such fibers may include northern softwood kraft fibers, redwood fibers, and pine fibers. Secondary fibers obtained from recycled materials may also be used. In addition, hardwood pulp fibers, such as eucalyptus fibers, may also be utilized.

[0035] Thermo-mechanical pulp fibers may also be added to the base web. Thermo-mechanical pulp refers to pulp that is typically cooked during the pulping process to a lesser extent than conventional pulps. Thermo-mechanical pulp tends to contain stiff fibers and has higher levels of lignin. Thermo-mechanical pulp may be added to the base web in order to create an open pore structure, thus increasing bulk and absorbency and improving resistance to wet collapse. When present, thermo-mechanical pulp may be added to a layer of the base web in an amount from about 10 percent to about 30 percent by weight of the fibers. When using thermo-mechanical pulp, a wetting agent is also desirably added during formation of the web. The wetting agent may be added in an amount less than about 1 percent by weight of the fibers and, in one aspect, may be a sulphonated glycol.

[0036] When pulp fibers are used to form the base web, the web may also be treated with a chemical debonding agent to reduce inner tiber-to-fiber strength. Suitable debonding agents that may be used when the base web contains pulp fibers include cationic debonding agents such as fatty dialkyl quaternary amine salts, mono fatty alkyl tertiary amine salts, primary amine salts, imidazoline quaternary salts, and unsaturated fatty alkyl amine salts. Other suitable debonding agents are disclosed in U.S. Pat. No. 5,529,665 to Kaun. The debonding agent may be an organic quaternary ammonium chloride. In this aspect, the debonding agent may be added to the fiber furnish in an amount from about 0.1 percent to about 1 percent by weight, based on the total weight of fibers present within the furnish.

[0037] A base web may also be hydraulically entangled (or hydroentangled) to provide further strength. Hydroentangled webs, which are also known as spunlace webs, refer to webs that have been subjected to columnar jets of a fluid that cause the fibers in the web to entangle. Hydroentangling a web typically increases the strength of the web. The base web may comprise HYDROKNIT®, a nonwoven composite fabric that contains 70 percent by weight pulp fibers that are hydraulically entangled into a continuous filament material. HYDROKNIT® material is commercially available from Kimberly-Clark Corporation of Dallas, Tex.

[0038] As mentioned above, for most applications, nonwoven webs used to construct a finger glove will contain synthetic fibers. For nonwoven webs containing substantial amounts of synthetic fibers, the webs may be bonded or otherwise consolidated in order to improve the strength of the web. Various methods may be utilized in bonding webs. Such methods include through-air bonding and thermal point bonding. In addition, other conventional means of bonding, such as oven bonding, ultrasonic bonding, hydroentangling, or combinations of such techniques, may be utilized in certain instances.

[0039] Thermal point bonding bonds the fibers together according to a pattern. In general, the bonding areas for thermal point bonding, whether pattern un-bonded or pattern bonded fabrics, may be in the range of 50 percent total bond area or less. More specifically, the bond areas of the present inventive webs may be in the range of about 40 percent total bond area or less. Even more specifically, the bond areas may be in the range of about 30 percent total bond area or less and may be in the range of about 15 percent total bond area or less. Typically, a bond area of at least about 10 percent may be acceptable for creating the base webs, although other total bond areas will function, depending on the particular characteristics desired in the final product. The percent bond areas will be affected by a number of factors, including the type(s) of polymeric materials used in forming the fibers or filaments of the nonwoven web, whether the nonwoven web is a single- or multi-layer fibrous structure, and the like. Bond areas ranging from about 15 percent to about 50 percent, and more particularly from about 15 percent to about 40 percent, have been found suitable.

[0040] Base webs may include a texturized surface where the finger glove is to contact a user's teeth and gums. The texturized surface may facilitate removal of residue and film from the teeth and gums. The texturized surface may be positioned oh the finger glove only where the finger glove is to contact the teeth and gums or may completely cover the exterior surface of the finger glove. The manner in which a texturized surface is formed on a nonwoven web for use may vary depending upon the particular application of the desired result.

[0041] In one aspect, when processing substrates containing polyolefin fibers, the rolls may be heated to a temperature of from about 110° C. to about 138° C., and particularly from about 115° C. to about 127° C. For most applications, both rolls and are heated. Patterned roll, however, may be heated to a higher temperature than roll and nip vice versus.

[0042] The point un-bonded material contains tufts having a height of at least 0.05 cm. More particularly, the height of the tufts will vary from about 0.127 cm to about 0.254 cm. The tufts may have a circular shape. It should be understood, however, that tufts may have any suitable shape. For instance, the tufts may be square, triangular, or doughnut shaped. For most aspects, the bond area surrounding the tufts may be from about 15 percent to about 40 percent of the surface area of the material, and particularly from about 20 percent to about 40 percent of the surface area of the material. A suitable bond pattern is given in U.S. Pat. No. 5,858,515.

[0043] There are many other methods for creating texturized surfaces on base webs and many other texturized materials may be utilized. Examples of known nonwoven, texturized materials, include rush transfer materials, flocked materials, wireform nonwovens, and the like. Through-air bonded fibers, such as through-air bonded bicomponent spunbond, or point un-bonded materials, such as point un-bonded spunbond fibers, may be incorporated into the base web to provide texture to the wipe.

[0044] Textured webs having projections from about 0.1 mm to about 25-mm, such as pinform meltblown or wireform meltblown, may also be utilized in a base web. Still another example of suitable materials for a texturized base web include textured coform materials. In general, "coform" means a process in which at least one meltblown diehead is arranged near a chute through which other materials are added to the web while it forms. Such other materials may include, for example, pulp, superabsorbent particles, or cellulose or staple fibers. Coform processes are described in U.S. Pat. No. 4,818,464 to Lau and U.S. Pat. No. 4,100,324 to Anderson et al. Webs produced by the coform process are generally referred to as coform materials.

[0045] The texturized material may be a loop material. As used herein, a loop material refers to a material that has a surface that is at least partially covered by looped bristles. It is believed that looped bristles provide various advantages in relation to conventional bristles. For example, the inherent stiffness in a looped structure allows the use of finer yarns and a corresponding increase in surface area for a given stiffness. The lack of a sharp end on a looped bristle may reduce abrasion, which refers to the damage that may occur to soft tissue in the mouth.

[0046] The looped bristles that may be used may vary depending upon the particular application. For instance, the stiffness of the looped bristles may be varied by varying different factors, including the height of the loop, the inherent properties of the looped material, the fiber diameter, the fiber type, and any post-formation treatments (e.g. chemical coatings) that may be performed on the looped material.

[0047] In general, the height of the looped bristles should be short enough so that the loops are unlikely to get caught on teeth or other structures being scrubbed, but still sufficiently long to be effective in cleaning inter-proximal areas. For most applications, the loops should be less than about 20 mm, particularly from about 1 mm to about 5 mm, and more particularly from about 1.5 mm to about 3.5 mm. The height of the looped bristles on a loop material may be homogenous or heterogeneous. The looped bristles may be contained on the looped material according to a particular pattern or may be randomly arranged on the loop material. For example, in one aspect, the looped bristles may be arranged in rows and columns on the loop material. The looped bristles may be arranged vertically or at any suitable angle to the surface of the material. Further, the looped bristles may be sparsely spaced apart or may be densely packed together.

[0048] The loop material may be made in a number of different ways. For example, the loop may be a woven fabric or a knitted fabric. The loop material is made by needle-punching loops into a substrate. The loop material may be formed through a hydroentangling process or may be molded, such as through an injection molding process. Of course, any other suitable technique known in the art for producing looped bristles may also be used.

[0049] The looped bristles may be made from various natural or synthetic materials. For instance, the bristles may be made from polyester, nylon, polypropylene, polyethylene, polylactic acid, or various other polymers.

[0050] The looped bristles may also be made from natural fibers, including cotton or wool. The looped bristles may be made from monofilament yarns, multifilament yarns, or spun yarns. The looped bristles may be flavored or unflavored and may be treated, with, for example, a fluoride compound or other additive. The looped bristles may be made from the same material as the base material on which the bristles are contained or may be made from a different material. For example, as described-above, the bristles may be needle punched into a woven or non-woven backing layer. The loop material may also be made from a single layer of material or may be a laminate. For example, a base layer containing the looped bristles may be laminated to various other layers. The base layer may be laminated to a woven layer, a knitted layer, a non-woven layer, an expandable layer such as spandex, a stretch bonded layer, or a neck bonded layer, or may be attached to various non-woven webs including spun-bonded webs or spunbond meltblown-spunbond laminate.

[0051] In one particular aspect, the loop material used in the finger glove is a loop material commonly used in hook and loop fasteners. For example. VELCRO® loops No. 002 made by VELCRO®, USA, Inc. may be used. This material is made with nylon loops. In an alternative aspect, the looped fastener material may be elastic. Elastic woven loop materials include VELSTRETCH® Tape 9999 and MEDFLEX® Tape 9399, both marketed by VELCRO®, USA, Inc.

[0052] As described above, the finger glove contains an elastomeric component, so that the finger glove may better fit around a human finger. In particular, the first section **20** is typically made from a base web that includes an elastomeric nonwoven material. In some aspects, both the second section **30** and the first section **20** are made from a base web having an elastomeric component. Further, The finger glove **10** may be made from a unitary base web structure having an elastomeric component.

[0053] The elastomeric component may be elastic strands or sections uniformly or randomly distributed throughout the base web. Alternatively, the elastomeric component may be an elastic film or an elastic nonwoven web. The elastomeric component may also be a single layer or may be a multi-layer material.

[0054] In general, any material known in the art to possess elastomeric characteristics may be used as an elastomeric component. When incorporating an elastomeric component, such as described above, into a base web, it is often desired that the elastomeric material form an elastic laminate with one or more other layers, such as foams, films, apertured films, and/or nonwoven webs. The elastic laminate generally contains layers that may be bonded together so that at least one of the layers has the characteristics of an elastic polymer. Examples of elastic laminates include; but are not limited to neck-bonded laminates, stretch-bonded laminates and neck-stretch-bonded laminates.

[0055] The term "neck-bonded" refers to an elastic member being bonded to a non-elastic member while the non-elastic member is extended in the machine direction creating a necked material. "Neck-bonded laminate" refers to a composite material having at least two layers in which one layer is a necked, non-elastic layer and the other layer is an elastic layer thereby creating a material that is elastic in the cross direction. Examples of neck-bonded laminates are such as those described in U.S. Pat. Nos. 5,226,992, 4,981,747, 4,965,122, and 5,336,545, all to Morman, all of which are incorporated herein by reference.

[0056] The term "stretch-bonded" refers to a composite material having at least two layers in which one layer is a gatherable layer and the other layer is an elastic layer. The layers are joined together when the elastic layer is in an extended condition so that upon relaxing the layers, the gatherable layer is gathered. For example, one elastic member may be bonded to another member while the elastic member is extended at least about 25 percent of its relaxed length. Such a multilayer composite elastic material may be stretched until the nonelastic layer is fully extended. One type of stretch-bonded laminate is disclosed, for example, in U.S. Pat. No. 4,720,415 to Vander Wielen et al., which is incorporated herein by reference. Other composite elastic materials are described and disclosed in U.S. Pat. No. 4,789,699 to Kieffer et al., U.S. Pat. No. 4,781,966 to Taylor, U.S. Pat. No. 4,657,802 to Mornan, and U.S. Pat. No. 4,655,760 to Morman et al., all of which are incorporated herein by reference.

[0057] A "neck-stretch-bonded" laminate is defined as a laminate made from the combination of a neck-bonded laminate and a stretch-bonded laminate. Examples of necked-stretched bonded laminates are disclosed in U.S. Pat. Nos. 5,114,781 and 5,116,662, which are both incorporated herein by reference. A neck-stretch bonded laminate is stretchable in the machine direction and in a cross machine direction and may be made with a nonwoven basing that is texturized. In particular, the neck-stretched bonded laminate may be made so as to include a nonwoven facing that gathers and becomes bunched so as to form a textured surface. In this manner, the neck-stretched bonded laminate may be used to form the entire finger glove having stretch characteristics in two directions and having a textured surface for cleaning the teeth and gums of a user.

[0058] The elastic member used in neck-bonded materials, stretch-bonded materials, neck-stretch-bonded materials and in other similar laminates may be made from materials, such as described above, that are formed into films, such as a microporous film, fibrous webs, such as a web made from meltblown fibers, or foams. A film, for example, may be formed by extruding a filled elastomeric polymer and subsequently stretching it to render it microporous.

[0059] Fibrous elastic webs may also be formed from an extruded polymer. For instance, as stated above, in one aspect the fibrous web may contain meltblown fibers. The fibers may be continuous or discontinuous. Besides meltblown webs, however, it should be understood that other fibrous webs may be used. In an alternative aspect, elastic spunbond webs may also be formed from spunbond fibers.

[0060] The finger glove may further include a moisture barrier that is incorporated into or laminated to a base web. Such a barrier may prevent, or at least minimize, leakage from outside the glove by establishing a barrier to the passage of liquid from the glove to the finger placed therein. As shown in **FIG. 1**, for example, a layer of material or film **12** may be provided to form the moisture barrier: which may act as a barrier between the outer layer of the glove **10** and a finger. In this aspect, as shown in **FIG. 1**, a moisture barrier may act as an inner lining for the first section **20** only, while the second section **30** possesses no such inner lining. It should also be understood that the moisture barrier may be a liner for both the first section **20** and the second section **30**. The moisture barrier may be applied asymmetrically or unevenly to the glove such that one portion of the glove is substantially moisture impervious, while another portion is not. It should be understood that a moisture barrier may be applied to the glove **10** as a layer of the base web, or as an outer lining for the base web. It should also be understood that the moisture barrier may be inherent within the base web structure such that it would not constitute a separate lining thereof.

[0061] The moisture barrier may be made from liquid-impermeable plastic films, such as polyethylene and polypropylene films. Generally, such plastic films are impermeable to gases and water vapor, as well as liquids.

[0062] While completely liquid-impermeable films may prevent the migration of liquid from outside the glove to the finger, the use of such liquid- and vapor-impermeable barriers may sometimes result in a relatively uncomfortable level of humidity being maintained in a glove **10**. As such, in some aspects, breathable, liquid-impermeable barriers are desired. As used herein, the term "breathable" means that the barrier or film is pervious to water vapor and gases. In other words, "breathable barriers" and "breathable films" allow water vapor and gases to pass through, but not liquids.

[0063] One suitable breathable barrier is a multilayered, clothlike barrier comprised of at least three layers. The first layer is a porous nonwoven web; the second layer, which is joined to one side of the first layer, comprises a continuous film of PVOH; and the third layer, which is joined to either the second layer or the other side of the first layer not joined with the second layer, is another porous nonwoven web. The second layer continuous film of PVOH is not microporous, meaning that it is substantially free of voids which connect the upper and lower surfaces of the film.

[0064] In other cases, various films may be constructed with micropores therein to provide breathability. The micropores form what is often referred to as tortuous pathways through the film. Liquid contacting one side of the film does not have a direct passage through the film. Instead, a network of microporous channels in the film prevents water from passing, but allows water vapor to pass.

[0065] In some instances, the breathable, liquid-impermeable barriers are made from an polymer films that contain any suitable substance, such as calcium carbonate. The films are made breathable by stretching the filled films to create the microporous passageways as the polymer breaks away from the calcium carbonate during stretching.

[0066] In some aspects, any of the above layers and/or materials may also be dyed or colored so as to form a base web or moisture barrier having a particular color. The moisture-barrier **50**, for example, may be provided with a colored background. White tufts, colored tufts, and/or a white titanium oxide background could be utilized.

[0067] As described above, the finger glove may be made from various components that contain various features. The finger glove may include a non-elastic component, an elastic component, a moisture barrier. If desired, a texturized surface may be located on the finger glove for facilitating the scrubbing and brushing of teeth and gums. Further, the finger glove may be made from single layer materials or laminates which, in turn, may be made from various materials and fibers.

[0068] In this aspect, the finger glove **10** includes the first section **20** thermally bonded to the second section **30**. The first section, in this aspect, is a three layer laminate. The laminate includes an interior polypropylene spunbond layer, a middle moisture barrier layer, and an outer bi-component spunbond layer that forms an exterior surface of the finger glove.

[0069] The polypropylene spunbond layer may have a basis weight of from about 10.2 gsm to about 34 gsm, and may particularly have a basis weight of about 17 gsm. The moisture barrier layer may be a film made from linear low density polyethylene containing a calcium carbonate filler. The film may be stretched in order to create pores for making the film breathable while remaining substantially impermeable to liquids. The moisture barrier layer may have a basis weight of from about 0.67 gsm to about 34 gsm, and particularly may have a basis weight of from about 17 gsm. The polypropylene spunbond layer may be adhesively secured to the moisture barrier layer.

[0070] In an alternative aspect, the interior polypropylene spunbond layer may be replaced with a nonwoven web made from polypropylene/polyethylene bicomponent fibers. The middle moisture barrier layer, on the other hand, may be a film made from a mixture of polymers, such as CATALLOY® film marketed by the Pliant Corporation.

[0071] The exterior layer may be a spunbond or through-air bonded web made from bicomponent polyethylene/polypropylene filaments in a side-by-side arrangement. The exterior layer may have a basis weight from about 34 gsm to about 169 gsm, and may particularly have a basis weight of from about 67 gsm to about 135.6 gsm. Alternatively, the exterior layer itself may be a layered or laminate structure. For example, a two-banked process may be used in which a layer of larger diameter fibers is formed on a layer of small diameter fibers.

[0072] As mentioned above, the second section **30** is an elastic laminate. The first section **20** may be a stretch-bonded laminate sheet. The stretch-bonded laminate sheet may include elastic threads made from an elastomeric material sandwiched between two polypropylene spunbond layers. The elastic threads may be made, for example, from a styrene-ethylene butylene-styrene block copolymer, such as KRATON® G 2740, available from the Kraton Chemical Company. The stretch-bonded laminate may have a basis weight of from about 34 gsm to about 170 gsm, particularly from about 52 gsm to about 118.7 gsm, and more particularly from about 68 gsm to about 102 gsm.

[0073] Instead of a stretch-bonded laminate sheet, the first section **20** may be a neck-bonded laminate sheet. The neck bonded laminate sheet may include a metallocene catalyzed elastic polyethylene film sandwiched between two polypropylene spunbond layers. The spunbond layers may have a basis weight of about 15 gsm prior to being stretched. The polyethylene film may have a basis weight from about 17 gsm to about 52 gsm.

[0074] The dimensions of the finger glove will depend upon the particular application and purpose for which it is to be used. The finger glove may be constructed in order to fit around the finger of an adult or the finger of a child. The finger glove may also be constructed to fit around two fingers instead of just one. For most single finger gloves, the wipe should have a length of from about 1 inch to about 5 inches and a median flattened width of from about 0.5 inches to about 1.5 inches. When constructed to fit around two fingers, the finger glove may have a median width of from about 0.75 inches to about 2.5 inches, depending on the elasticity of the wipe.

[0075] In still a further aspect, hook structures may be laminated to the backing of an elastic material containing loop bristles as described above. In this aspect, the elastic looped material may be wrapped around a finger and secured to itself using the hook structures. Once secured to a finger, the material may be used to scrub an adjacent surface.

[0076] In general, a finger glove may also be applied with a variety of chemical additives. For instance, any material, chemical, or additive commonly applied by cotton ball, swabs, or gauzes may be applied to a finger glove. Examples of such additives may include, but are not limited to, medications, diaper rash ointments, alcohols, oral anesthetics, facial make-up removal agents, and the like.

[0077] Various other additives, chemicals, and materials may be applied to a finger glove also. For instance, certain additives may be when the finger glove is used as an oral cleaning device. For example, in one aspect, cationic polymers may be coated onto the finger glove. Cationic polymers may help clean teeth and/or gums because they typically have a strong attraction for negatively charged bacteria and deleterious acidic byproducts that accumulate in plaque. One example of a cationic polymer that is suitable for use is chitosan (poly-N-acetylglucosamine, a derivative of chitin) or chitosan salts. Chitosan and its salts are natural biopolymers that may have both hemostatic and bacteriostatic properties. As a result, chitosan may help reduce bleeding, reduce plaque, and reduce gingivitis.

[0078] In addition to chitosan and chitosan salts, any other cationic polymer known in the art may generally be applied to a finger glove. Cationic starches may be used. One such suitable cationic starch is, for example, COBOND® starch, which may be obtained from National Starch and Chemical Co. of Finderne, N.J. In another aspect, cationic materials that are oligomeric compounds may be used. In some aspects, combinations of cationic materials may be utilized.

[0079] In addition to the chemical additives mentioned above, a variety of other additives may be applied to a finger glove. Other well known dental agents may be utilized, for example. Examples of such dental agents include, but are not limited to alginates, soluble calcium salts, phosphates, flourides, such as sodium flouride (NaF) or stannous flouride (SnF2), and the like. Mint oils and mint oil mixtures may be applied to a finger glove.

[0080] For instance, in one aspect, peppermint oil may be applied to the finger glove. In another aspect, a mint oil/ethanol mixture may be applied. Components of mint oil (e.g., menthol, carvone) may also be used. Additionally, various whitening agents may be applied to the finger glove. Examples of whitening agents include peroxides and in situ sources of peroxide, such as carbamide peroxide.

[0081] Furthermore, The finger glove may also comprise an anti-ulcer component. In particular, one aspect may comprise a component designed to act as an anti-*H. pylori* agent. In general, any additive known in the art to be an anti-ulcer or anti-*H. pylori* agent may be used. In one aspect, for example, bismuth salts may be utilized. Another example of a suitable bismuth salt is PEPTO-BISMOL® sold by The Procter & Gamble Company, containing bismuth subsalicylate. In addition to bismuth salts, other examples of suitable anti-ulcer additives include, but are not limited to, tetracycline, erythromycin, clorithromycin or other antibiotics. Any additive useful for treating peptic ulcers, such as H2-blockers, omeprazole, sucralfate, and metronidazole, may be used as well.

[0082] Other additives may also be applied to the glove. Such materials may include, but are not limited to, flavoring agents, anti-microbial agents, preservatives, polishing agents, hemostatic agents, surfactants, etc. Examples of suitable flavoring agents include various sugars, breath freshening agents, and artificial sweeteners as well as natural flavorants, such as cinnamon, vanilla and citrus. In one aspect, xylitol, which provides a cooling effect upon dissolution in the mouth and is anti-cariogenic, may be used as the flavoring agent. As stated, preservatives, such as methyl benzoate or methyl paraben, may also be applied to a finger glove. The additives may be applied to the finger glove as is or they may be encapsulated in order to preserve the additives and/or to provide the additive with time release properties.

[0083] A variety of other additives and combinations thereof may be applied to a finger glove. Although various specific additives have been specifically mentioned above, it should be understood that any additive may generally be applied to a finger glove. The additives may be applied to the finger glove as is or they may be encapsulated in order to preserve the additives and/or to provide the additive with time release properties. In general, the chemical additives described above may be applied to a finger glove according to a number of ways known in the art. The additives may be applied to the glove using a saturant system, by print, roll, blade, spray, spray-drying, foam, brush treating applications, etc., which are all known in the art.

[0084] The additives may further be applied as a mixture of molten solids or co-extruded onto the glove. Additionally, in another aspect, the chemical additives may be impregnated into the material during manufacturing as is well known in the art. It should be understood that when coated onto a glove as described above, the additives may be applied to the base web before or after the base web is stamped or bonded to form a finger glove. It should also be understood that, if desired, various additives, solutions, and chemicals may be applied by the consumer to the glove just before use.

[0085] The additive is encapsulated and then applied to the finger glove. This techniques is commonly used in the food and pharmaceutical industries. A variety of encapsulation techniques is well-known in the art and include spray drying, spray chilling and cooing coacervation, fluidized bed coating, liposome entrapment, rotational suspension separation, and extrusion.

[0086] Regardless of the mechanism utilized to apply the chemical additives to the glove, the additives may be applied to the glove via an aqueous solution, non-aqueous solution, oil, lotion, cream, suspension, gel, etc. When utilized, an aqueous solution may contain any of a variety of liquids, such as various solvents and/or water. The solution may often contain more than one additive. The additives applied by an aqueous solution or otherwise constitute approximately less than 80 percent by weight of the finger glove. The additives may be applied in an amount less than about 50 percent of the weight of the glove.

[0087] The additives may also be applied asymmetrically onto the glove to reduce costs and maximize performance of the glove. For instance, a flat sheet of the base web may be asymmetrically contacted with a particular coating agent, and thereafter stamped and bonded to form a finger glove, wherein only the surface used to clean teeth is coated with the additives. The finger glove is stamped and bonded, and thereafter asymmetrically coated with a particular coating agent.

[0088] Prior to being shipped and sold, the finger glove may be placed in various sealed packaging in order to preserve any additives applied to the finger glove or otherwise to maintain the finger glove in a sterile environment. Various packaging materials that may be used include ethylene vinyl alcohol (EVA) films, film foil laminates, metalized films, multi-layered plastic films, and the like. The packaging may be completely impermeable or may be differentially permeable to the flavorants depending on the application:

[0089] Finger gloves significantly improve the feel and comfort for the user. Applications for the described glove may be a variety of areas such as to apply diaper rash ointments, medications, alcohol, oral anesthetics, etc. In some cases, they may be utilized to remove various types of materials from a person, such as, for example, facial make-up. In each of these fields, they may be used to deliver a particular additive or ingredient to the area of application.

[0090] The device described hererin is particularly useful for applications that require to deliver an additive or ingredient is the field of teeth or gum cleaning. Teeth cleaning is regularly required to maintain dental hygiene. Various films and residues, such as plaque, may build up on teeth and gums over a period of time, thereby adversely affecting oral health. In the past, toothbrushes have been utilized to remove such films and residues. Conventional toothbrushes typically have two ends with one end being a handle and the other containing bristles designed to disrupt and remove plaque and other residues from the surfaces being cleaned

[0091] Finger gloves significantly improve the feel and comfort to the user. The flush seam not only reduces the abrasion and risk of cuts, it also helps the glove to fit the finger better. When the glove is turned inside out, the flush seam will not create a space between the glove and the finger as it would in a glove with a conventional seam.

[0092] It's also conceivable that the finger glove may be used for as a painting tool or as an educational tool.

EXAMPLES

[0093] Various finger gloves were made with various materials as described in the following examples. The finger gloves were constructed from the materials using ultrasonic welding to form the seams. In each of the following examples, unless otherwise specified, each finger glove was made from a mold (or cut and seal anvil or horn) having a length of from about 7 cm to about 7.6 cm in a single cut/seal step. The cut and seal horn was made to have the cut knife at ~130 microns and the angle between the cut knife and welding area at ~45 degrees. The finger gloves were made with an open end for the insertion of a finger and with a closed-end. The width of the mold at the opening ranged from 2.7 cm to 3.175 cm. The width at the closed end ranged from 2.03 cm to 2:3 cm After being formed, the finger gloves were cut to a length of from 2.54 cm to 7.6 cm. The width at the opening normally ranged from 1.52 cm to 2.54 cm (internal diameter). When containing a pull-on tab, the length of the tab ranged from 0.51 cm to 2.03 cm.

Example 1

[0094] A 3-D finger glove was formed as follows.

[0095] A first section made from a point un-bonded spunbond laminate material was ultrasonically welded to a stretch-bonded laminate (SBL) sheet using a Branson 920 IW ultrasonic welder. The point un-bonded spunbond laminate formed the front of the finger glove, while the SBL sheet formed the back of the finger glove.

[0096] The point un-bonded spunbond laminate was formed by thermally bonding together a polypropylene spunbond web, a breathable film sheet, and a bicomponent spunbond web. The breathable film sheet was placed in between the spunbond webs.

[0097] The polypropylene spunbond web had a basis weight of 17 gsm. The bicomponent spunbond web was made from bicomponent filaments having a polyethylene component and a polypropylene component in a side-by-side relationship. The bicomponent spunbond web had a basis weight of 84.8 gsm. The breathable film sheet was made from a linear low density polyethylene containing calcium carbonate filler. The film was stretched in order to create a microporous film. The film had a basis weight of 17 gsm.

[0098] The bicomponent spunbond web was thermally bonded to the film laminate using a point-un-bonded pattern that created texture. In particular, circular tufts were formed on the bicomponent spunbond web side of the laminate. During bonding, a top bond roll having the point-un-bonded pattern was heated to 127° C. while a bottom bond roll was heated to 115.5° C.

[0099] The SBL sheet included threads of an elastic material sandwiched between two polypropylene spunbond layers. The elastic material used was KRATON® G2740 S-EB-S block copolymer. The SBL sheet had a basis weight of 84.8 gsm. An imprinted, magnesium bond plate served as an anvil for ultrasonic bonding of the SBL sheet to the point un-bonded spunbond laminate.

[0100] The bicomponent spunbond layer of the point un-bonded spunbond material was placed adjacent to the SBL sheet during the ultrasonic welding process, which placed the textured nubs against the SBL sheet. The SBL was stretched by 40 percent while the layers were bonded together.

Example 2

[0101] A 3-D finger glove as described in Example 1 was constructed. In this example, however, the bicomponent spunbond sheet of the point un-bonded spunbond laminate had a basis weight of 122 gsm. During the point un-bonded process, the top bond roll was heated to 132° C., while the bottom bond roll was heated to 115.5° C. The SBL was stretched by 35 percent while the layers were bonded together. After being formed, the finger glove was treated with peppermint oil. The finger glove was then subsequently used to clean the mouth of an adult.

Example 3

[0102] A 3-D finger glove was constructed similar to the finger glove described in Example 1, however, the bicomponent spunbond sheet of the point un-bonded spunbond laminate was a through-air bonded bicomponent fibrous web having a basis weight of 61 gsm. The bicomponent filaments contained a polyethylene component and a polypropylene component in a side-by-side relationship. During the point un-bonded process, the top bond roll was heated to 127° C. while the bottom bond role was heated to 115.5° C. The SBL was stretched by 40 percent while the layers were bonded together.

Example 4

[0103] A 3-D finger glove as described in Example 3 was constructed. In this example, however, the through-air bonded bicomponent fibrous web had a basis weight of 84.8 gsm. Further, the bicomponent web was yellow-pigmented. The SBL was stretched by 40 percent while the layers were bonded together.

Example 5

[0104] A 3-D finger glove as described in Example 1 was constructed. In this example, however, the point un-bonded spunbond laminate was replaced with a multi-layered material that included a spunbond-meltblown-spunbond laminate that was adhesively laminated to a strip of loop material from a hook and loop fastener. The spunbond-meltblown-spunbond laminate had a total basis weight of 34 gsm. The laminate included a 15 gsm meltblown interior layer made from polypropylene fibers. The two spunbond facings were also made from polypropylene. The loop material was VELCRO® loop 2000 material obtained from VELCRO® USA, Inc. The resulting multi-layered material was ultrasonically welded to the stretch-bonded laminate described in Example 1, such that the spunbond-meltblown-spunbond layer was positioned adjacent to the stretch-bonded layer. The SBL was stretched by 50 percent while the layers were bonded together. The loop material formed a facing of the finger glove.

Example 6

[0105] A 3-D finger glove as described in Example 1 was constructed and used to remove make-up. In this example, however, the point un-bonded spunbond laminate was replaced with a coform sheet. The coform sheet was a meltblown web containing 50 percent pulp fibers and 50 percent by weight polypropylene fibers. The coform sheet had a basis weight of 41 gsm. The coform sheet was ultrasonically welded to the stretch-bonded laminate described in Example 1.

[0106] In this example, the section of the finger glove made from the coform sheet was longer than the section made from the stretch-bonded laminate creating a pull-on tab. The SBL was stretched by 40 percent while the layers were bonded together. The finger glove was then subsequently dipped in alcohol and used to remove make-up.

Example 7

[0107] A 3-D finger glove was constructed similar to the finger glove described in Example 1. In this example, the bicomponent spunbond web contained in the point un-bonded spunbond laminate had a basis weight of 118.7 gsm. During the point un-bonded process, the top bond roll was heated to 132° C., while the bottom bond roll was heated to 121° C.

[0108] In contrast to Example 1, however, instead of using a stretch-bonded laminate sheet, the point un-bonded spunbond laminate was ultrasonically welded to a neck-bonded laminate while the NBL was stretched 35 percent. The neck-bonded laminate was formed by adhesively bonding a 15 gsm polyurethane film between a pair of opposing polypropylene spunbond facings. The adhesive used to form the neck-bonded laminate was Findley H2525A adhesive obtained from Findley, Inc. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 30 percent of their original width.

[0109] After the point un-bonded spunbond laminate was welded to the neck-bonded laminate, the finger glove was inverted so that the textured nubs formed an exterior face of the finger glove. Peppermint oil was then applied to the finger glove which was subsequently used to clean the mouth of an adult.

Example 8

[0110] A 3-D finger glove was constructed similar to the finger glove described in Example 1, using the same point un-bonded spunbond laminate. In contrast to Example 1, however, instead of using a stretch-bonded laminate as the elastic material, a neck-bonded laminate was used. The point un-bonded spunbond laminate was ultrasonically welded to the neck-bonded laminate while the NBL was stretched 40 percent.

[0111] The neck-bonded laminate contained a 35 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 45 percent of the original width.

[0112] After the point un-bonded spunbond laminate was welded to the neck-bonded laminate. Peppermint oil was then applied to the finger glove which was subsequently used to clean the mouth of an adult.

Example 9

[0113] A 3-D finger glove similar to the finger glove described in Example 7 was constructed. In this example, however, the neck-bonded laminate sheet was formed by adhesively bonding a 15 gsm polyether amide elastic film (PEBAX-2533 film obtained from Elf Atochem) to a pair of opposing bidirectionally extensible polypropylene spunbond facings. The polypropylene spunbond facings had a basis weight of 10.2 gsm prior to being stretched or necked. When attached to the elastic film, the spunbond facings were necked to a width corresponding to 40 percent of their original width and then crimped an amount to produce a 50 percent reduction in length.

[0114] The neck-bonded laminate was ultrasonically welded to the point un-bonded spunbond laminate while the NBL was stretched ~35% percent. It was observed that the neck-bonded laminate sheet had elastic properties in two dimensions. The finger glove was subsequently used to clean the mouth of an adult.

Example 10

[0115] A 3-D finger glove as described in example 1 was constructed from a point un-bonded spunbond laminate ultrasonically welded to a stretch-bonded laminate while the SBL was stretched by 35 percent. The total basis weight for the point un-bonded spunbond sheet was 2.7169.55 gsm. The finger glove was treated with the following additives.

[0116] Additive Wt percent: Peppermint oil (obtained 0.51 from Global-Essence, Inc.) 1 percent Chitosan citrate solution 0.07 (formed from chitosan and made by Vanson Chemical Company and citric acid made by Archer Daniels Midland) T MAZ-80 Polysorbate 0.55 Surfactant (obtained from BASF) Xylitol (obtained from Cultor, 8.56) Water 90.31

[0117] After being immersed in the above aqueous solution, the finger wipe was allowed to dry and sealed in plastic film. After a period of time, the finger glove was removed and used in the mouth of a subject.

Example 11

[0118] A 3-D finger glove similar to the one described in example 1 was constructed. In this example, the point un-bonded laminate had a total basis weight of 2.7169.55 gsm. Further, instead of being welded to a stretch-bonded laminate, the point un-bonded laminate was adhesively secured to a elastomeric, meltblown polyether ester (ARNITEL® EM400 polyether ester obtained from DSM Engineering Plastics) while the meltblown web was stretched 40 percent. The melt blown polyether ester web had a basis weight of about 67.8 gsm.

Example 12

[0119] A 3-D finger glove similar to the one described in example 1 was constructed. In this aspect, the point un-bonded laminate had a total basis weight of 2.71 to 69.55 gsm.

[0120] In this example, the point un-bonded laminate was welded to a spunbond-meltblown-spunbond laminate that had been adhesively bonded to a thin strip of an elastic material commonly used as leg elastics in diapers.

[0121] The spunbond-meltblown-spunbond laminate had a total basis weight of 34 gsm wherein the meltblown interior layer had a basis weight of 0.13 to 5.6 gsm. The elastic strip was 1 cm in width and was adhesively bonded to the spunbond-meltblown-spunbond laminate. The elastic strip included elastic threads sandwiched between two polypropylene spunbond facings and was stretched ~45 percent during bonding.

[0122] The resulting finger glove made by welding the spunbond-meltblown-spunbond laminate to the point un-bonded spunbond sheet was elastic because of the elastic strip attached to the spunbond-meltblown-spunbond laminate. The elastic strip was not uniformly elastic. The finger glove was made so that the elastic strip rested between the first and second knuckles of the finger of an adult after insertion of the finger into the finger glove.

Example 13

[0123] A 3-D finger glove was formed using a first section made from a spunbond-meltblown-spunbond laminate welded to a second section made from a neck-bonded laminate. The spunbond-meltblown-spunbond laminate formed the front side of the finger glove, while the neck-bonded laminate formed the back side.

[0124] The spunbond-meltblown-spunbond laminate was made from polypropylene and had a total basis weight of 27.2 gsm.

[0125] The neck-bonded laminate was similar to the neck-bonded laminate described in Example 8, except that it had a heavier weight film and heavier weight facings. The facings were necked to a width 40 percent of their original width. The laminate had an overall basis weight of 142.8 gsm.

[0126] The two sections were thermally bonded together in the shape of a finger while the NBL was stretched 50 percent, and excess material was trimmed from the edges of the wipe. The spunbond-meltblown-spunbond laminate section of the finger glove was longer than the neck-bonded laminate section, such that a pull-on-tab was provided for ease in placing the wipe on a finger. Specifically, the length of the spunbond-meltblown-spunbond laminate section was approximately 5 centimeters while the length of the neck-bonded laminate was approximately 4 centimeters. Upon flattening of the finger glove, the width at the bottom of the wipe was approximately 2.4 centimeters.

Example 14

[0127] A 3-D finger glove was constructed similar to the finger glove in Example 1, insofar as an elastic material, was welded to a texturized surface with a finger-shaped design. In contrast to Example 1, however, instead of using a stretch bonded laminate as the elastic material, a neck-bonded laminate was used. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width.

[0128] In further contrast to Example 1, the texturized material was not a point un-bonded nonwoven, but rather a knitted nylon material having looped bristles approximately 3 to 4 mm in length. This knitted material had a basis weight of approximately 84.8 gsm. The bristles had a consistent directional component, allowing scrubbing in a direction with relatively high or low coefficient of friction. The looped bristles were fairly homogeneous in size and distribution, and generally extended between 3 mm and 4 mm from the surface. The bristle loops were comprised of multiple filaments.

[0129] The knitted material was ultrasonically welded to the neck-bonded laminate while the NBL was stretched 40 percent. Peppermint oil was then applied to the finger glove, which was subsequently used to clean the mouth of an adult.

Example 15

[0130] A 3-D finger glove was constructed similar to the finger glove in Example 1; insofar as an elastic material was welded to a texturized surface with a finger-shaped design. In contrast to Example 1, however, instead of using a stretched bonded laminate as the elastic material, a necked bonded laminate was used. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width.

[0131] In further contrast to Example 1, the texturized material was not a point un-bonded nonwoven, but rather a knitted nylon material having looped bristles approximately 3 mm in length. This knitted material had a basis weight of approximately 84.8 gsm, and was ultrasonically welded around the perimeter to a breathable film laminate (34 gsm), thereby providing a nonwoven/knit laminate containing looped bristles and a moisture barrier.

[0132] The bristled, nonwoven/knit laminate was ultrasonically welded to the neck-bonded laminate while the NBL was stretched 35 percent, such that the looped bristles were adjacent to the NBL. A commercially available baby toothpaste (GERBER® Tooth & Gum Cleanser) was then applied to the finger glove, which was subsequently used to clean the mouth of a toddler.

Example 16

[0133] A 3-D finger glove was constructed similar to the finger glove in Example 1'. The point un-bonded spunbond laminate was ultrasonically welded to a neck-bonded laminate while the NBL was stretched 40 percent. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width.

[0134] In further contrast to Example 1, the texturized material was a conventional loop fastener, VELCRO® Med-Flex Tape 9399, comprised of nylon and Spandex. This material was elastic but in this example was used without stretching. The looped bristles were monofilament, and generally extended from 0.5 mm to 3 mm from the surface when unstretched, with some extending to 10 mm when tension was applied.

[0135] The knitted material was ultrasonically welded to the neck-bonded laminate. Peppermint oil was then applied to the finger glove which was subsequently used to clean the mouth of an adult.

Example 17

[0136] A 3-D finger glove was constructed similar to the finger glove in Example 1. In contrast to Example 1, however, instead of using a stretch-bonded laminate as the elastic material, a neck-bonded laminate was used. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width.

[0137] In further contrast to Example 1, the texturized material was a laminate comprised of a commercially available loop fastener, VELCRO® Loop 002 Tape 0599, approximately 84.8 gsm, comprised of nylon adhesively laminated to a breathable film laminate (34 gsm). The texturized material, was ultrasonically welded to the necked bonded laminate while the NBL was stretched 35 percent. A commercially available baby toothpaste (from GERBER®) was then applied to the finger glove, which was subsequently used to clean the mouth of a toddler.

Example 18

[0138] A 3-D finger glove was constructed similar to the finger glove in Example 1. In contrast to Example 1, however, instead of using a stretch-bonded laminate as the elastic material, a neck-bonded laminate was used. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width. In further contrast to Example 1, the texturized material was a needlepunched nonwoven substrate, with a basis weight of approximately 169.55 gsm.

[0139] The texturized material was ultrasonically welded to the necked-bonded laminate while the NBL was stretched 45 percent. Peppermint oil was then applied to the finger glove, which was subsequently used to clean the mouth of an adult.

Example 19

[0140] The ability of a fastening mechanism to be attached to a finger toothbrush was demonstrated. A 3-D finger glove was formed as follows. Specifically, a first section made from a point un-bonded polypropylene spunbond material was ultrasonically welded to a stretch-bonded laminate (SBL) sheet using a Branson 920 IW ultrasonic welder while the SBL was stretched 45 percent. The point un-bonded spunbond material formed the front of the toothbrush, while the SBL sheet formed the back of the toothbrush.

[0141] The point un-bonded spunbond had a total basis weight of about 92 gsm. The spunbond material was thermally bonded using a point-un-bonded pattern that created texture. In particular, circular tufts were formed on the spunbond material. During bonding, a top bond roll having the point-un-bonded pattern was heated to 165.6-182° C. while a bottom bond roll was heated to 149° C.

[0142] The SBL sheet, on the other hand, included threads of an elastic material sandwiched between two polypropylene spunbond layers. The elastic material used was KRATON® G2740 S-EB-S block copolymer. The SBL sheet had a basis weight of 84.8 gsm. An imprinted, magnesium bond plate was used to bond the SBL sheet to the point un-bonded spunbond material. The resulting structure was in the shape of a finger, with a more rounded region at the top and straight sides tapering outwards, such that the interior width at 3.7 cm from the top was about 1.8 cm. Excess material was trimmed around the seam, leaving a textured finger toothbrush with a pull-on tab (SBL side).

[0143] A thin (0.6 cm) strip of SBL was formed into a ring (1.5 cm diameter) with a tail, and thermally bonded to close the ring. The end of the tail (5 cm) was thermally bonded to the pull-on tab of the finger toothbrush to produce a finger toothbrush with a tethered fastening ring. The toothbrush was treated with peppermint oil (5 microliters) and used by a small child.

Example 20

[0144] The ability of a 3-D finger glove to apply an anti-ulcer component was demonstrated. A finger glove was formed as follows. Specifically, a first section made from a point un-bonded spunbond laminate material was ultrasonically welded to a stretch-bonded laminate sheet using a Branson 920 IW ultrasonic welder while the SBL was stretched 40 percent. The point un-bonded spunbond laminate formed the front of the finger glove, while the SBL sheet formed the back of the finger glove.

[0145] The point un-bonded spunbond laminate was formed by thermally bonding together a first polypropylene spunbond web, a breathable film sheet, and a second polypropylene spunbond web. The breathable film sheet was placed in between the spunbond webs. The first polypropylene spunbond web had a basis weight of 17 gsm. The second polypropylene spunbond web had a basis weight of 95.2 gsm an average fiber diameter of 7.05 denier. The breathable film sheet was made from a linear low density polyethylene containing a calcium carbonate filler. The film was stretched in order to create a microporous film. The film had a basis weight of 17 gsm.

[0146] The point un-bonded spunbond laminate material was thermally bonded using a point-un-bonded pattern that created texture. In particular, circular tufts were formed on the second polypropylene spunbond web side of the laminate. During bonding, a top bond roll having the point un-bonded pattern was heated to 177° C. while a bottom bond roll was heated to 165.5° C.

[0147] The SBL sheet, on the other hand, included threads of an elastic material sandwiched between two polypropylene spunbond layers. The elastic material used was KRATON® G2740 S-EB-S block copolymer. The SBL sheet had a basis weight of 84.8 gsm. An imprinted, magnesium bond plate was used to bond the SBL sheet to the point un-bonded spunbond laminate.

[0148] The second polypropylene spunbond layer of the point un-bonded spunbond material was placed adjacent to the SBL sheet during the ultrasonic welding process, which placed the textured nubs against the SBL sheet.

[0149] After ultrasonic welding, excess material was trimmed around the edges and the finger glove was inverted to place the seam on the inside and the textured nubs on the outside.

[0150] The resulting bonded wipe was in the shape of a finger having a rounded region at the top and straight sides tapering outwards, such that the width of the bond pattern 1 cm from the top was 2.3 cm, and the width at 4.5 cm from the top was 2.8 cm.

[0151] Thereafter, tetracycline hydrochloride and peppermint oil (20 microliters) were added to the finger glove. The tetracycline hydrochloride was obtained from Apothecon, a subsidiary of Bristol-Myers Squibb, in the form of a drug sold as SUMYCIN®. The tetracycline hydrochloride was applied to the finger glove in the form of a solution containing 100 microliters of a 40 mg SUMYCIN®/milliliter solution in water.

Example 21

[0152] The ability of a 3-D finger glove to be treated with an anti-ulcer component was demonstrated. The 3-D finger glove of Example 1 was treated with metronidazole and peppermint oil (20 microliters). Metronidazole was obtained in the form of a topical gel called METROGEL®, which is commercially available from Galderma. 200 mg of METROGEL® was applied to the finger glove, which thereby delivered 1.5-mg of metronidazole to the finger glove.

Example 22

[0153] The ability of a 3-D finger glove to be treated with the following anti-ulcer component was demonstrated. The finger glove of Example 1 was treated with bismuth subsalicylate which is the active ingredient in PEPTO-BISMOL® sold by Procter and Gamble. 300 microliters of PEPTO-BISMOL® was applied to the finger glove, which was subsequently used to clean the mouth of a user.

Example 23

[0154] The ability of a 3-D finger glove to be treated with the following anti-ulcer components was demonstrated. The 3-D finger glove of Example 1 was treated with a suspension of bismuth subsalicylate (200 microliters of PEPTO-BISMOL®), metronidazole (50 mg of METROGEL® lotion), tetracycline (10 mg of SUMYCIN®), and peppermint oil (20 microliters) were applied to the finger glove, which was then used to clean the mouth of a user.

Example 24

[0155] A point un-bonded spunbond laminate material was formed by thermally fusing (using a point-un-bonded pattern) three materials: a bicomponent spunbond web (PE/PP, side-by-side, 0.416 to 9.55 gsm), a film (0.178 mm CATALLOY® film, supplied by Pliant Corporation), and a through-air bonded web (PE/PP, side-by-side, 118.7 gsm), with bond pressure, line speed, and temperature adequate to sustain the desirable level of bonding and texture. In this case, the top patterned roll was heated to 124.4° C., while the bottom bond roll was heated to 120° C. The resulting point un-bonded spunbond laminate sheet was ultrasonically welded to a neck-bonded laminate sheet using a Branson 920 IW ultrasonic welder while the NBL was stretched 40 percent. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width.

[0156] An imprinted, stainless steel bond plate served as the ultrasonic anvil to make the finger-shaped bond pattern. The bicomponent spunbond layer of the point un-bonded laminate spunbond material was adjacent to the NBL during the ultrasonic welding process (meaning the textured nubs faced and were pressed against the SBL sheet during welding). After ultrasonic welding, excess material was trimmed around the edges, and the finger glove was inverted to place the seam on the inside and the textured nubs on the outside. A peppermint flavoring (37 &mgr; L) was added to the finger glove, which was subsequently packaged in a laminated packaging material that substantially retained the flavoring over time. After one month, the package was opened and the product used to clean the mouth of an adult.

Example 25

[0157] A point un-bonded spunbond laminate material was formed by thermally fusing (using a point-un-bonded pattern) three materials: a bicomponent spunbond web (PE/PP, side-by-side, 0.416 to 9.55 gsm), a film (0.178 mm CATALLOY® film, supplied by Pliant Corporation), and a through-air bonded web (PE/PP, side-by-side, 118.7 gsm), with bond pressure, line speed, and temperature adequate to sustain the desirable level of bonding and texture. In this case, the top patterned roll was heated to 124.4° C., while the bottom bond roll was heated to 120° C. The resulting point un-bonded spunbond laminate sheet was ultrasonically welded to a neck-bonded laminate sheet using a Branson 920 IW ultrasonic welder while the NBL was stretched 40 percent. The neck-bonded laminate contained a 34 gsm metllocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width.

[0158] An imprinted, stainless steel bond plate served as the ultrasonic anvil to make the finger-shaped bond pattern. The bicomponent spunbond layer of the point un-bonded laminate spunbond material was adjacent to the NBL during the ultrasonic welding process (meaning the textured nubs faced and were pressed against the SBL sheet during welding). After ultrasonic welding, excess material was trimmed around the edges, and the finger toothbrush was inverted to place the seam on the inside and the textured nubs on the outside. A suspension of encapsulated flavors in oil (200 mg of a suspension made up of 300 mg encapsulated wintergreen flavor, available from Flavors of North America, Inc., 220 mg encapsulated natural mint flavor, available from Flavors of North America, Inc., 120 mg xylitol, available from Cultor Corporation, and 2 g sunflower oil) was added to the finger toothbrush. The product was packaged, sealed, and then open 48 is hours later to clean the mouth of an adult.

Example 25

[0159] Example Number 24 was repeated. Instead of using sunflower oil, however, the encapsulated flavors were combined with food-grade propylene glycol.

Example 26

[0160] A point un-bonded spunbond laminate material was formed by ultrasonically fusing (using a point-un-bonded pattern on a 5.08 cm rotary ultrasonic anvil) two materials: a film (0.178 mm CATALLOY® film, supplied by Pliant Corporation), and through-air bonded web (PE/PP, side-by-side, 128.9 gsm), with bond pressure, power, and line speed adequate to sustain the desirable level of bonding and texture. The through-air bonded web was next to the patterned anvil during the bonding process. The resulting point un-bonded spunbond laminate sheet was ultrasonically welded to a neck-bonded laminate sheet using a Branson 290 IW ultrasonic welder while the NBI was stretched 40 percent. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width.

[0161] An imprinted, stainless steel bond plate served as the ultrasonic anvil to make the finger-shaped bond pattern. The bicomponent spunbond layer of the point un-bonded laminate spunbond material was adjacent to the NBL during the ultrasonic welding process (meaning the textured nubs faced and were pressed against the SBL sheet during welding). After ultrasonic welding, excess material was trimmed around the edges, and the finger glove was inverted to place the seam on the inside and the textured nubs on the outside. Peppermint oil was added to the finger glove, which was subsequently used to clean the mouth of an adult.

Example 27

[0162] A point un-bonded spunbond laminate material was formed by ultrasonically fusing (using a point-un-bonded pattern on a 5.08 cm rotary ultrasonic-anvil) two materials: a breathable film sheet (LLDPE/$CaCO_3$)/polypropylene, 34 gsm) and a through-air bonded web (PE/PP, side-by-side fibers 118.7 gsm), with bond pressure, line speed, and temperature adequate to sustain the desirable level of bonding and texture. The resulting point un-bonded spunbond laminate sheet was ultrasonically welded to a neck-bonded laminate (NBL) sheet using a Branson 920 IW ultrasonic welder while the NBL was stretched 50 percent. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width. An imprinted, stainless steel bond plate served as the ultrasonic anvil to make the finger-shaped bond pattern. The bicomponent spunbond layer of the point un-bonded laminate spunbond material was adjacent to the NBL during the ultrasonic welding process (meaning the textured nubs faced and were pressed against the SBL sheet during welding). After ultrasonic welding, excess material was trimmed around the edges, and the finger glove was inverted to place the seam on the inside and the textured nubs on the outside.

Example 28

[0163] A point un-bonded spunbond laminate material was formed by ultrasonically fusing (using a point-un-bonded pattern on a 5.08 cm rotary ultrasonic anvil) two through-air bonded webs. Both webs were comprised of bicomponent, PE/PP, side-by-side fibers. The top web, adjacent to the patterned anvil during bonding, was comprised of pentalobal shaped fibers, and had a basis weight of 118.7 gsm. The bottom web was comprised of conventional round fibers, and had a basis weight of 128.9 gsm. Bond pressure (60 psi) and line speed (80 fpm) were set to ensure adequate bonding, although adjustments to the power could allow for other settings providing nearly equivalent bonding. The resulting point un-bonded spunbond laminate sheet was ultrasonically welded to a neck-bonded laminate (NBL) sheet using a Branson 920 IW ultrasonic welder while the NBL was stretched 45 percent. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width. An imprinted, magnesium bond plate served as the ultrasonic anvil to make the finger-shaped bond pattern. The bicomponent spunbond layer of the point un-bonded laminate spunbond material was adjacent to the NBL during the ultrasonic welding process (meaning the textured nubs faced and were pressed against the SBL sheet during welding). After ultrasonic welding, excess material was trimmed around the edges, and the finger glove was inverted to place the seam on the inside and the textured nubs on the outside.

Example 29

[0164] A point un-bonded spunbond laminate material was formed by ultrasonically bonding two through-air bonded webs. Both webs were comprised of bicomponent, PE/PP, side-by-side fibers. The depth of the round circles (corresponding the un-bonded regions) in the patterned anvil was 0.060". The top web, adjacent to the patterned anvil during bonding, was comprised of pentalobal shaped fibers, and had a basis weight of 118.7 gsm. The bottom web was comprised of conventional round fibers, and had a weight of 128.9 gsm. Bond pressure (60 psi) and line speed (80 fpm) were set to ensure adequate bonding, although adjustments to the power could allow for other settings providing nearly equivalent bonding. The resulting point un-bonded spunbond laminate sheet was ultrasonically welded to a neck-bonded laminate sheet using a Branson 920 IW ultrasonic welder while the NBL was stretched 49 percent. The neck-bonded laminate contained a 34 gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a basis weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width. An imprinted, magnesium bond plate served as the ultrasonic anvil to make the finger-shaped bond pattern. The bicomponent spunbond layer of the point un-bonded laminate spunbond-material was adjacent to the NBL during the ultrasonic welding process (meaning the textured nubs faced and were pressed against the NBL sheet during welding). After ultrasonic welding, excess material was trimmed around the edges, and the finger glove was inverted to place the seam on the inside and the textured nubs on the outside.

Example 30

[0165] A point un-bonded spunbond laminate material was formed by ultrasonically bonding two through-air bonded webs. Both webs were comprised of bicomponent, PE/PP, side-by-side fibers. The depth of the round circles (corresponding the un-bonded regions) in the patterned anvil was 0.120". The top web, adjacent to the patterned anvil during bonding, was comprised of pentalobal shaped fibers, and had a basis weight of 118.7 gsm. The bottom web was comprised of conventional round fibers, and had a basis weight of 128.9 gsm. Bond pressure (60 psi) and line speed (80 fpm) were set to ensure adequate bonding, although adjustments to the power could allow for other settings providing nearly equivalent bonding. The resulting point un-bonded spunbond laminate sheet was ultrasonically welded to a neck-bonded laminate sheet using a Branson 920 IW ultrasonic welder while the NBL was stretched 40-percent. The neck-bonded laminate contained a 34-gsm metallocene-catalyzed polyethylene film laminated to a pair of opposing polypropylene spunbond facings. The spunbond facings had a weight of 17 gsm prior to being stretched or necked. The spunbond facings were necked to a width corresponding to 42 percent of their original width. An imprinted, magnesium bond plate served as the ultrasonic anvil to make the finger shaped-bond pattern. The bicomponent spunbond layer of the point un-bonded laminate spunbond material was adjacent to the NBL during the ultrasonic welding process (meaning the textured nubs-faced and were pressed against the NBL sheet during welding). After ultrasonic welding, excess material was trimmed around the edges, and the finger glove was inverted to place the seam on the inside and the textured nubs on the outside.

Example 31

[0166] A 3-D finger glove as described in Example 1 was constructed and used to apply petroleum jelly to an infant during a diaper change. In this example, however, the point un-bonded spunbond laminate was replaced with a spunbond/meltblown/spunbond laminate. The laminate had a basis weight of 47.5 gsm and was made entirely from polypropylene fibers. The laminate was ultrasonically welded to the stretch-bonded laminate described in Example 1.

[0167] In this example, The finger glove was then subsequently dipped in petroleum jelly, which was applied to an infant during a diaper change.

[0168] Although various aspects have been described using specific terms, devices, and methods, such description is for illustrative purposes only. The words used are words of description rather than of limitation. It is to be understood that changes and variations may be made by those of ordinary skill in the art without departing from the spirit or scope, which is set forth in the following claims. In addition, it should be understood that aspects of the various aspects may be interchanged in whole or in part. Therefore, the spirit and scope of the appended claims should not be limited to the description of the versions contained therein.

[0169] It should be noted that any given range presented herein is intended to include any and all lesser included ranges. For example, a range of from 45-90 would also include 50-90; 45-80; 46-89 and the like. Thus, the range of 95 percent to 99.999 percent also includes, for example, the ranges of 96 percent to 99.1 percent, 96.3 percent to 99.7 percent, and 99.91 to 99.999 percent.

What is claimed is:

1. A 3-D finger glove comprising a hollow member having an open end for the insertion of a finger, said hollow member comprising a first section attached to a second section, said first section comprising a nonwoven material, said second section comprising an elastic nonwoven material, said first section being bonded to said second section to make a seam, while said second section is stretched by an amount between 25 and 90 percent of the unstretched length.

2. The 3-D finger glove of claim 1 wherein the length of said first section divided by the length of said second section defines a length ratio, and said length ratio of first section to second section is about 25 to 90 percent.

3. The 3-D finger glove of claim 2 wherein the length ratio of first section to second section is about 50 to 70 percent.

4. The 3-D finger glove of claim 1 wherein said the ratio of first section to second section is about 25 to 50 percent.

5. The 3-D finger glove of claim 1 wherein said seam is less than 1 millimeter (mm) in width and 1 mm in height.

6. The 3-D finger glove of claim 1 wherein said seam is less than 50 microns in width and 50 microns in height.

7. The 3-D finger glove of claim 1 wherein said first section includes a texturized surface.

8. The 3-D finger glove of claim 7, wherein said texturized surface comprises looped bristles.

9. The 3-D finger glove of claim 7 wherein said texturized surface comprises a point un-bonded material.

10. The 3-D finger glove of claim 1 wherein said elastic nonwoven material is seclecte from the group consisting of stretch-bonded laminates, neck-bonded laminates and neck-stretch-bonded laminates.

11. The 3-D finger glove of claim 1 wherein said elastic nonwoven material comprises an elastic material positioned in between a first nonwoven web and a second nonwoven web.

12. The 3-D finger glove of claim 1 wherein said first section comprises a laminate including a moisture barrier layer positioned in between a first nonwoven web and a second nonwoven web.

13. A 3-D finger glove comprising a first section attached to a second section, said first section and said second section defining a pocket therebetween, said pocket having a distal end and a proximal end, said distal end being closed and said proximal end being open, said open proximal end being configured to allow the insertion of a finger into said pocket, said second section comprising an elastic nonwoven material, bonded to said first section while said second section is stretched.

14. The 3-D finger glove of claim 13 wherein said elastic nonwoven material comprises a laminate.

15. The 3-D finger glove of claim 13 wherein said elastic nonwoven material comprises an elastic material positioned in between a first nonwoven web and a second nonwoven web.

16. The 3-D finger glove ofin claim 15 wherein said elastic material comprises a film.

17. The 3-D finger glove of claim 13 wherein said elastic material comprises elastic strands.

18. The 3-D finger glove of claim 13 further comprising a moisture barrier layer incorporated into at least a portion of one of said first or said second sections.

19. The 3-D finger glove of claim 13 wherein said first section comprises a material selected from the group consisting of spun-bonded webs, meltblown webs, spun-bonded/meltblown/spun-bonded webs, through-air bonded webs, spun-bonded/meltblown webs, and bonded carded webs.

20. The 3-D finger glove of claim 19 wherein said first section defines a texturized surface, said texturized surface comprising a material selected from the group consisting of looped bristles, crimped fibers, and a point un-bonded material containing a plurality of tufts surrounded by bonded regions.

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