

United States Patent

[11] 3,618,754

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[21] Appl. No. **798,300**
[22] Filed **Feb. 11, 1969**
[45] Patented **Nov. 9, 1971**
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3,332,416 7/1967 Brickman et al. 117/7 X
3,523,528 8/1970 Patience et al. 128/169

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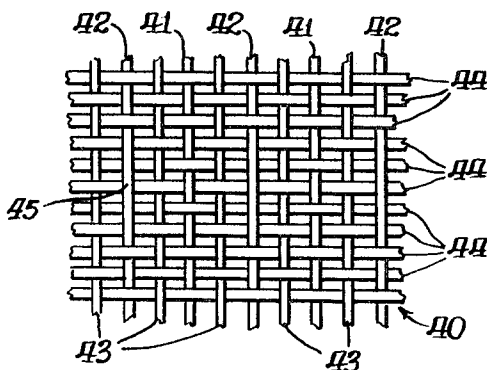
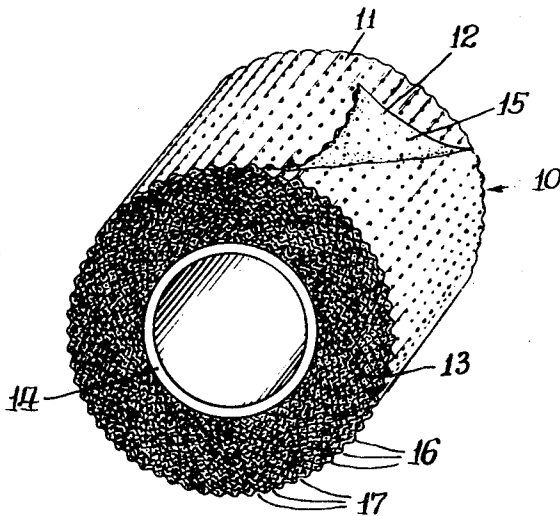
[54] CONFORMABLE ELASTIC ADHESIVE TAPE 15 Claims, 6 Drawing Figs.

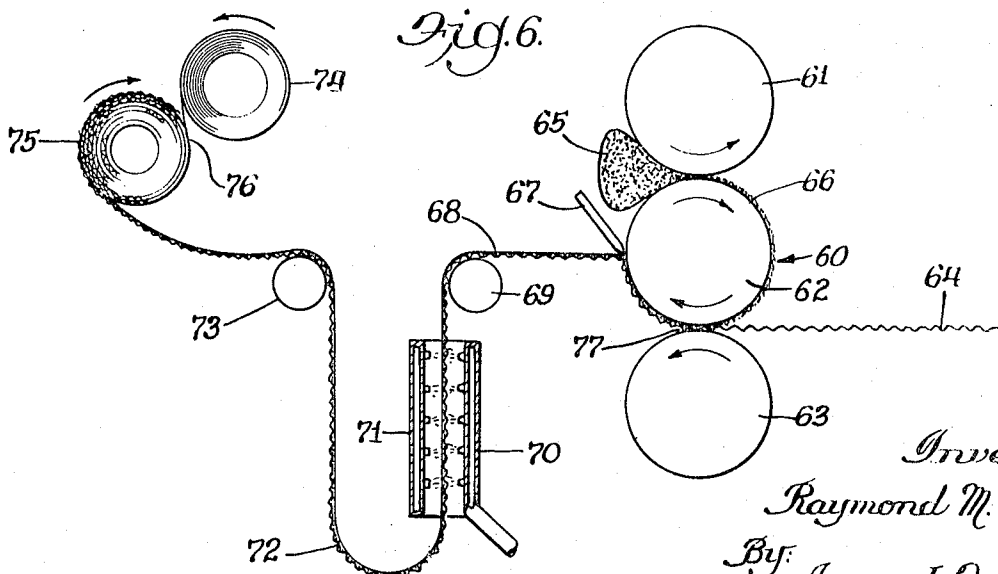
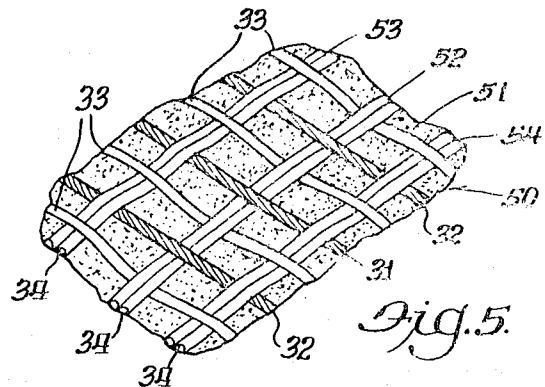
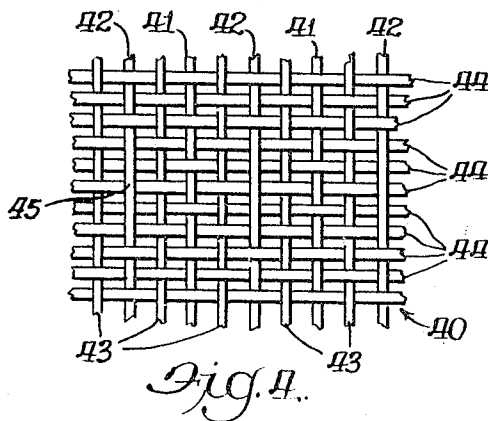
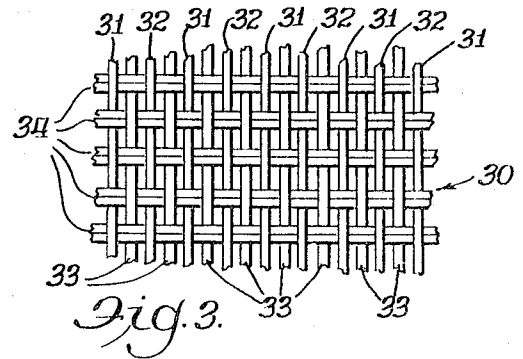
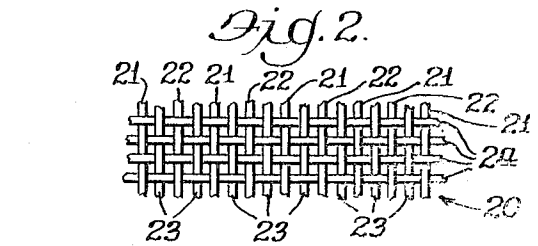
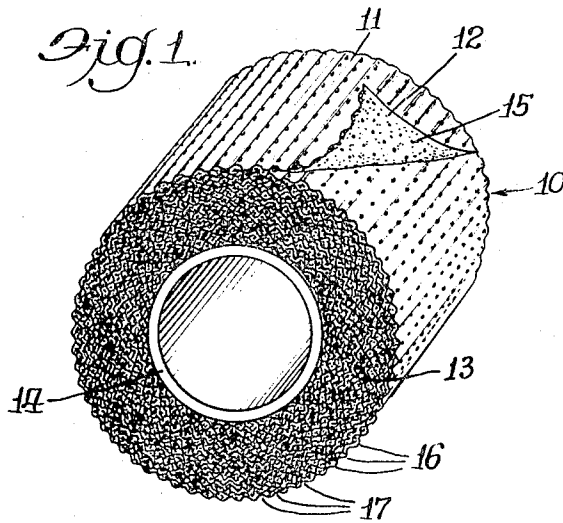
[52] U.S. Cl. 206/59 C,
117/7, 117/122 P, 161/73, 161/77, 161/91,
161/167
[51] Int. Cl. C09J 7/04
[50] Field of Search 117/7, 122
P, 122 A, 122 PA, 122 PS, 122 PB; 161/73, 77, 91,
167; 128/156, 169; 206/59 C

[56] References Cited UNITED STATES PATENTS

2,349,710 5/1944 Evans 117/7
2,661,776 12/1953 Gamber et al. 128/156 UX
2,787,266 4/1957 Scholl 128/156

ABSTRACT: A method for producing and the product thereof comprising a conformable elastic pressure-sensitive adhesive tape including a low modulus woven elastic backing weighing, when relaxed, in the range of 100 to 300 grams per square yard and incorporating distributed warp yarns with elastomeric cores in the ratio range of from 1 such warp yarn in three to one in 6 total warp yarns, which distributed warp yarns cause the major surfaces of the backing when relaxed to assume a nonplanar character including intermingled raised and depressed areas, and a layer of pressure-sensitive adhesive substantially conforming with and adherent to one of the major surfaces of the backing, major surfaces of the tape becoming more nearly planar upon being stretched, specific embodiments of the tape possessing breathability, transverse hand-tearability, high strength and ready unrollability with its backing and adhesive surfaces in contact.





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CONFORMABLE ELASTIC ADHESIVE TAPE

This invention is concerned with conformable elastic pressure-sensitive adhesive tapes and with a method of producing them.

BACKGROUND OF THE INVENTION

For many years it has been the practice as an effective protective measure to wrap vulnerable portions of the bodies of athletes with strengthening ribbonlike bands prior to their participation in strenuous and highly competitive games and contact sports where sprains, dislocations and other severe injuries to joints and muscles may be anticipated. These wrappings have been of various kinds, the most unsophisticated of which have been simply rolls of heavy cotton cloth ribbons.

One of the older type bandages still being used is an all cotton bandage with some degree of stretch imparted by the use of high twist S and Z yarns as the warp yarns. A variation of this bandage is lightly coated with a pressure sensitive adhesive.

Another commonly used wrapping is ordinary cotton cloth backed adhesive tape, which normally may be wrapped from the roll and torn with the fingers. Variations from simple cloth wrappings of cotton have included bandages in which the warp yarns have been stretch nylon, as is exemplified in U.S. Pat. No. 2,810,184. The retractive force of such wrappings obviously is very, very low. Therapeutic bandages in which all of the warp yarns have been spandex corespun or elastomeric-core wrapped yarns, as is exemplified in U.S. Pat. No. 3,409,008, have been used largely where an injury has already been received. Although relatively light, the specific bandage referred to is a true compression bandage having high power, high elongation and high recovery but with a leno rather than a selvedge edge. Among the more elaborate compression or constriction wrappings which are generally wrapped with considerable tension have been relatively bulky woven elastic bandages with selvages. Another compression type of wrapping is illustrated and described in U.S. Pat. No. 2,740,402, in which the described construction is foam latex interiorly reinforced with spaced elastic strands. An embodiment of this compression bandage is coated with pressure sensitive adhesive. Another older-type bandage, a composite fabric of knitted material and sheet rubber, is illustrated and described in U.S. Pat. No. 2,077,514.

SUMMARY OF THE INVENTION

This invention is concerned with conformable elastic pressure-sensitive adhesive tapes and with a method of producing them. The adhesive tapes of the invention have wide utility as general athletic tapes, as hospital tapes, and for protective wrappings for injured or vulnerable portions of the body, particularly the body joints, but the conformability, light weight and elasticity which all of the tapes possess, and the tearability, breathability and high strength features which some embodiments possess, make them useful for a wide variety of taping and wrapping operations in which the durability and flexibility of cloth is preferred over elastic film-backed tapes or over extensible conformable paper tapes.

The adhesive tapes of this invention are not critical as to the type of pressure sensitive adhesive which is suitable, but the thickness of the adhesive may be a consideration if lightweight, breathability or imperviousness are important. The tapes of the invention include woven elastic backings readily stretched to a length at least 2.2 times the unstretched relaxed length by a force of about 0.3 to 1.0 pounds per inch width, weighing from about 100 grams to about 300 grams per square yard and containing distributed elastomeric-core covered yarns either corespun or wrapped core. The elastomeric material is not critical although spandex is preferred, with cores ranging from 40 to 140 denier being suitable. The core covering material is not critical. The elastomeric warp yarns are distributed among other flexible warp yarns preferably but not essentially in an ordered ar-

rangement across the fabric. The warp yarns may vary in sizes equivalent to cotton from 10's to 120's preferably but not necessarily of substantially uniform size. The fabric is woven with a combined ends per inch from about 18 to about 40 with a preferred ends per inch of about 32. The filling yarns are flexible but not critical as to material. The picks per inch may range from about 4's to about 30's.

The method of producing the tapes of the invention includes weaving a fabric with distributed warp yarns with elastomeric cores and other warp yarns with the latter under normal weaving tension and with the elastomeric core yarns at least partially stretched and preferably at dead stretch. The method further includes coating the fabric in fully stretched condition with a pressure sensitive adhesive to produce a pressure-sensitive adhesive tape and applying heat to the tape under slack conditions to permit the tape to relax and become nonplanar. A release coating may be applied to the backing fabric to enhance unrollability preferably when the latter is fully stretched at any point either prior to layer coating with adhesive or afterwards.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1, a roll 10 of a typical elastic pressure-sensitive adhesive tape of the invention is illustrated wound over the core 14. The woven backing 11 has distributed warp yarns with elastomeric cores. These distributed warp yarns preferably occur in a repeating pattern of distribution but they may be mixed in proper ratio indiscriminately with other warp yarns, their exact distribution being indeterminate but predictable by statistical methods. The elastomeric core yarns cause the backing when relaxed to assume a nonplanar character including intermingled raised and depressed areas 16 and 17. The pressure-sensitive adhesive coating 12 also has raised and depressed areas and optionally may have small areas 15 devoid of adhesive which permit the tape to breathe. The loose relaxed winding of the roll 10 is shown at the cut end 13 which in this embodiment has a corrugated appearance.

FIG. 2, a typical stretched fabric 20 useful in the manufacture of products of the invention is illustrated. Warp yarns 21 are preferably of stretch nylon but other yarns might be substituted to give somewhat different properties to the product. Warp yarns 22 are preferably corespun spandex with the spun portion of rayon but other spun coverings or yarn wrappings may be used to protect the spandex or other synthetic or natural elastomer core. Warp yarns 23 are preferably spun rayon but may be any other spun yarn or multifilament yarn. Filler yarns 24 are preferably of cotton but rayon or other natural and synthetic yarns may be utilized.

FIG. 3, another typical fabric 30 useful in the manufacture of the products of the invention is illustrated. In this illustration the fabric is shown stretched with warp yarns 31 being preferably of stretch nylon, warp yarns 32 being covered spandex yarn, and warp yarns 33 being preferably of spun rayon. Picks 34 are of doubled yarn, preferably of cotton.

FIG. 4 illustrates still another typical fabric 40 useful in the manufacture of products of the invention in its stretched condition. Warp yarns 41 are preferably of stretch nylon while warp yarns 42 are covered elastomeric yarns preferably spandex covered with a spun rayon covering. It is to be noted that warp yarns 42 have floats 45 on one side of the fabric, which side ultimately will be that which receives the pressure-sensitive adhesive. Warp yarns 43 are preferably of spun rayon while filler yarns 44 are preferably of cotton.

FIG. 5 illustrates isometrically a relaxed portion 50 of the fabric of FIG. 3 coated with adhesive 51. It should be noted that elastomeric warp yarns 32 although considerably relaxed are still taut and tend to resist displacement from the linear position as opposed to the other warp yarns which are either slack as with rayon yarns 33 (or with other nonstretch warp yarns which might be used instead, the slack being caused by retraction of the elastomeric yarns), or, as with warp stretch yarns such as nylon stretch yarns 31, are readily displaced

even when the yarn is not slack. As a consequence the picks 34 tend to lie either in raised position or depressed position with respect to the elastomeric yarns. When picks lie entirely on one side or the other of the elastomeric yarns in the fabrics of this invention, transverse ridges 53 and 54 and valleys 52 appear when the fabric relaxes and the corrugated appearance such as is illustrated in FIG. 1 is evident. Pressure-sensitive adhesive 51 which presents a flat surface as applied when the fabric is at dead stretch, follows the contours of the fabric when the latter retracts. The adhesive also assumes a corrugated appearance when applied to backing of this construction. It is evident that the corrugated appearance is emphasized by the use of dual picks in the fabric of FIG. 5.

There is some advantage in rewinding in that roll 75 can become quite large before it is replaced and somewhat greater care in final winding on the shorter rolls can be exercised.

Pressure-sensitive adhesives suitable for the tapes of this invention are not critical. Any of the well-known adhesives employed for pressure-sensitive adhesive tapes are suitable and may be utilized. It is preferred, however, that the adhesive not be applied directly to the woven backing in thin solvent solutions because of the tendency inherent in such solutions for soaking into the interstices and even the fibers of the woven materials. Calendering is the preferred method of applying the adhesive directly to the backing but other procedures which involve applying the adhesive in relatively viscous form may be employed. For instance, if the adhesive is not spread directly from solution onto the woven backing, even a solvent spreading technique may be employed. This is accomplished by the well-known transfer technique in which the adhesive is applied from a solvent solution onto a temporary backing such as a slip sheet or peel surface to which it has relatively low adhesion. Polyethylene film and silicone coated sheets have been employed for this purpose. The dried and now viscous layer of tacky adhesive, carried on its temporary backing, is then applied to its permanent backing in adhesive contact. The composite is pressed together usually by being passed through the restricted nip of two rubber squeeze rolls or in some cases between steel rolls. The adhesive now is much more firmly united to its permanent backing than to the temporary slip sheet, which latter may be peeled off when it is convenient, exposing the adhesive surface with the adhesive intact and adherent to the backing. With respect to this invention, if the optimum stretch is to be realized, the adhesive should be applied to its permanent backing while the latter is substantially at dead stretch, after which the tape should be relaxed in the usual way.

A suitable typical pressure-sensitive adhesive for use in preparing the tapes of this invention is as follows:

Ingredients	Parts by Weight
Pale Crepe Rubber	34
Tackifier resin (hydrogenated rosin)	35
Filler (zinc oxide)	30.2
Age resistor (alkylated poly hydroxy phenol)	0.8

If the same picks are caused to appear on opposite sides of adjacent elastomeric warp yarns, a pebbled surface rather than a corrugated surface will result. Likewise, interrupted ridges may be produced by causing the picks to appear on the same side of several consecutive elastomeric yarns and then to appear on the opposite side of several next consecutive elastomeric yarns.

One may also vary the surface rugosities by employing floats in the warp yarns. Thus, in FIG. 4 the elastomeric warp yarns 42 are caused to float across certain picks. When, as is illustrated, the same picks are floated across with the elastomeric warp yarns, a very definite transverse rib effect is achieved in

the relaxed fabric which is preferably woven with the elastomeric warp yarns at dead stretch. When the elastomeric yarn is the float yarn, the rib effect is more pronounced before the fabric is coated with the adhesive than subsequently even after the coated fabric is permitted to relax. Other warp yarns than the elastomeric yarn obviously may be floated on the adhesive side or on both sides. These latter variations do have an effect on the degree of interweaving, and when the elastomeric warp is not floated, do affect the relaxed surface contour to an appreciable extent. But when the elastomeric warp yarns are floated across several picks, their effect on the surface contour is the predominant effect.

FIG. 6 illustrates apparatus useful in practicing a typical method of the invention to produce the products of the invention. A calender 60 equipped with rolls 61, 62 and 63 is used to extrude a sheet 66 of pressure-sensitive adhesive mass about 3 to 10 mils thick and preferably about 4.5 mils thick from a bulk 65 onto roll 62, where it contacts uncoated or release coated backing fabric 64 in the fully stretched condition. The adherent layers pass through the nip 77 with the gap set preferably at about 1.5 mils plus the thickness of the stretched backing. The adherent tape 68 is scraped from roll 62 by the hot doctor blade 67. The tape then passes over a roller 69 and between moist or dry heating means preferably two steam jet banks 70 and 71 as illustrated, where the adhesive tape relaxes from its fully stretched condition. It hangs in the loop 72 to substantially remove tension. It then passes over roll 73 and is wound up on roll 75. If the tape is not to be rewound into shorter length rolls, roll 75 may be wound on its permanent core and the tape cut into proper widths directly through tape and core. When this is done and a release coating is desired, it may be applied to the preferably stretched backing either before or after the application of pressure-sensitive adhesive. When the tape is to be rewound, however, a sheet of facing material 76 from the roll 74 is interposed between the adhesive and the backing.

The woven fabric backing materials of the products of the invention in their relaxed state weigh in the range of 100 to 300 grams per square yard and are substantially nonplanar with intermingled raised and depressed surface portions which substantially disappear when the fabric is fully stretched. The fabric is very readily stretched to a length at least 2.2 times its unstretched relaxed length by a force of about 0.3 to 1.0 pounds per inch width. The stretched fabric has the open appearance of gauze but differs from gauze in that the fabric includes distributed among other warp yarns, elastomeric yarns which preferably are corespun, the material of the spun portion not being critical. Optionally the elastomeric core may be covered by a wrapping of one or two helical windings of yarn. The covering may be of cotton, rayon, nylon or a number of other synthetic materials in spun or yarn form. Backing materials of this invention are woven with the elastomeric warp yarns in the stretched condition and preferably in the fully stretched condition referred to as "dead stretch." The other warp yarns are woven with the usual tension. The material and structure of these other yarns is not critical to the invention but certain warp yarns supplementing the elastomeric warp yarns may be preferred for one end use while other warp yarns may be preferred for another end use. Thus, if one of the requisite characteristics is transverse hand-tearability, the supplementary warp yarns might be of a material such as rayon which can be torn across readily. Or if high tensile strength is a requisite instead of tearability, one might utilize fine spun glass warp yarns or perhaps multifilament or monofilament nylon as the yarns supplementary to the elastomeric warp yarns. For softness one might select spun yarns. Thus the warp yarns supplementary to the elastomeric warp yarns should be selected from those yarns which give a desired result and which are capable of easy flexing so that the elastomeric yarns will not be materially restrained from retracting after being stretched. The elastomeric yarns should be distributed about every third warp yarn to about every sixth warp yarn across the width of the backing with the preferred distribution one of every four.

One can adjust the amount of retractive force which the fabric has by varying the warp ratio so as to increase or decrease the proportion of elastomeric warp yarns to the supplementary warp yarns. Another method is to modify the denier or the composition of the elastomeric core. Preferred elastomeric core material is spandex but natural rubber or synthetic rubbers other than spandex may be used satisfactorily. The preferred core denier is about 70 but may range from 40 denier to 140 denier. A rayon-covering spun to produce a 30/1 corespun yarn is preferred. The combined warp ends per inch range from about 18 to about 40 with the preferred yarns equivalent in size to 30's cotton yarn. Warp yarn equivalent sizes as coarse as cotton 10's and as fine as cotton 120's may be utilized in certain embodiments depending upon the strength and other required specifications and the yarn material being utilized.

With regard to FIG. 4, a yarn 43, preferably spun rayon, is shown on each side of each elastomeric yarn 42. At the point where the float in yarn 42 occurs, the two yarns 43 on either side of yarn 42 are in the same shed. If desired this may be avoided very readily by reversing the shed of the three warp yarns to the right of each odd elastomer yarn. Other modifications of the weave of FIG. 4 may be employed to increase the interlacing of the yarns.

In processing the tapes of this invention, if calendering is the method utilized as is preferred, a three or four roll calender may be employed. The three roll calender method is illustrated in FIG. 6. If a four roll calender is utilized, it may be expedient to lead the cloth at the right over the fourth roll and between the nip of this fourth roll and the center roll. Referring to FIG. 6, the range of temperatures on the top roll 61 are from about 240° to 270° F. with a preferred top roll temperature of 260° F. The range of temperatures for the center roll 62 are about 190° to 200° F. with a preferred center roll temperature of 190° F. The bottom roll 63 temperature range is about 180° to 210° F. with a preferred temperature of 200° to 210° F. In practice the cloth is caused to enter the calender at dead stretch, the nip between the center and bottom roll being open the thickness of the stretched cloth plus about 1.5 mils. The nip between the top and center roll is preferably set to extrude a sheet of pressure-sensitive adhesive about 4.5 mils thick onto roll 62. All but 1½ mils of this mass is thus pressed into the fabric with the remainder on the surface between the roll and the backing. The tape thus created moves adherent to the roll until it is scraped clean from adhesive contact with the center roll by the hot doctor blade 67 which should be heated in the temperature range of about 225° to 325° F., preferably at about 300° F.

After leaving the calender, the adhesive coated backing is prevented from relaxing to some extent by the adhesive. It is necessary, to get maximum elasticity in the tape, to warm the tape to permit it to relax and to that end steam at 180° F. or more or hot gas or other heat may be utilized. If the tape is to be rewound, the adhesive is faced with a slip sheet preferably when the tape is in its relaxed condition but alternatively the slip sheet facing may be applied during or just after the calendering operation, the tape with the slip sheet now attached being relaxed as before. A completely suitable slip sheet facing for this purpose is a product sold by Brown Company, Kalamazoo, Michigan, called "Vegetable Parchment." This is designated 35 pound P.L. crinkled 946 treated. The treatment is on both sides with a silicone resin.

The faced adhesive products of this invention may be sold in rolls, strips or sheets, with any necessary trimming being expedited and improved by chilling the tape to the point where the adhesive may be cut without smearing. But the preferred products of this invention are those which may be unrolled readily from a roll in which the back of the backing and the adhesive are in contact. The rugose character of the backing and the adhesive in contrast to the substantially planar condition immediately after calendering due largely to relaxation of the fabric before rolling, is definitely helpful in the problem of adhesion of the tape to its own backing and permits unrolling with the application of reasonable unrolling force. The

preferred tapes of this invention, however, are coated with a release coating which improves unrollability. The coating may be any of the well-known release coatings applied to the uncoated backing fabric preferably at dead stretch or to the back of the adhesive coated fabric whether the fabric is faced or unfaced, by using a reverse roll spreader. The preferred back coating is a water emulsion of polyethylene which has been suitably thickened to a convenient viscosity for spreading. The coating formula found most effective is as follows:

Ingredient	Parts by Weight
Polyethylene emulsion (41% solids)	10.8
Distilled water	21.2
Methocel (4,000 c.p.s. granular mc. standard)	0.9

The emulsion is diluted by the water and the methocel is sifted in and permitted to dissolve to prepare the coating emulsion for the reverse roll spreader.

In practice the gap on the reverse roll spreader is set at about 5 mils. The coated spreader roll and the tape backing are in contact but moving in opposite directions at relative speeds such that the release emulsion is wiped off preferably only on the ridges and raised portions of the backing. The ridge-coated backing or, as the case may be, the faced or unfaced adhesive tape then passes through an oven which dries and fuses the polyethylene emulsion into film patches largely adherent to the raised portions of the backing. The adhesive tape in large faced rolls is then cut into appropriate lengths and preferably laid in flat strips to relax, adhesive side up as the facing is removed. A plastic core is then placed transversely at the end on the exposed adhesive and the tape is rolled onto the tube core. The rolled tape, which is the width of the fabric, is then sliced through core and tape into individual rolls of the required width. Some of the more modern apparatus will do a clean job of adhesive tape roll slicing at ambient temperatures but on older equipment roll slicing may be expedited and the roll quality may be improved by chilling or even freezing the rolls prior to slicing into the required roll widths. Tapes formed in accordance with the herein described method may be stretched in the range of 40 to 50 percent with rapid recovery to substantially their original length after removal of the stretching forces.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The preferred embodiments of the conformable elastic adhesive tapes of the invention have elastic woven backings of the general-type illustrated in FIG. 4, weighing when relaxed in the range of 100 to 300 grams per square yard. The elastomeric warp yarns of the backing are 30's corespun yarns with a 70 denier spandex core and spun rayon covering. The other warp yarns are 70/2's nylon stretch yarn and 30's spun rayon yarns. The nylon warp yarns and the elastomeric warp yarns are separated by a spun rayon warp yarn so that out of every four warp yarns, two are spun rayon, one is a nylon stretch yarn, and one is a corespun elastomeric yarn. The fabric is woven with 32 ends per inch at dead stretch for the elastomeric warp yarns and at normal warp tension for the other warp yarns. The elastomeric yarns float across the same five picks on the side of the fabric which ultimately will be coated by the pressure-sensitive adhesive and then pass over and under a single pick and again over five picks. This pattern is repeated. All the other warp yarns are woven 1X1 but the three warp yarns to the right of each odd elastomeric warp yarn have their sheds reversed from those illustrated in FIG. 4. The filler yarns are cotton 10/1's with a pick count of 32 picks per inch. A coating of pressure-sensitive adhesive originally 4.5 mils in thickness of the formula set forth in the specification is adherent to the backing, the total thickness of the tape at dead stretch being 1½ mils plus the thickness of the

backing. The backing is coated with a dried and fused release coating of polyethylene emulsion of the formula set forth in the specification, the release coating being mostly present on the raised portion of the backing. The tape is relaxed with the major surfaces of the backing assuming a nonplanar appearance and the adhesive surface reflecting, to a degree, the underlying backing rugosity. The tape is stretchable to a length between 140 and 150 percent of its relaxed length, is conformable, breathable, readily tearable by hand transversely, and readily unrollable from roll form when the adhesive is in contact with the back of its own backing.

The preferred method of the invention is a method including the steps of weaving the backing material from the components indicated in the preferred product embodiment, coating the fabric with adhesive using apparatus of the type illustrated in FIG. 6, using roll temperatures as follows: top roll 260° F.; center roll 190° F.; and bottom roll 200° F.; with the gap between the top and center roll at 4½ mils and with a bulk of adhesive of the formula set forth in the specification and using a gap between the center and bottom roll of 1½ mils plus the stretched thickness of the backing. The tape is then relaxed by running it between steam jets with steam at, at least, 180° F. The tape is then faced as indicated in FIG. 6 with "Vegetable Parchment," is back coated with the polyethylene release coating using a reverse roll spreader with the gap at 5 mils, is dried and fused in an oven at about 250° F., the facing is removed and the tape spread flat in roll length adhesive side up. It is loosely rolled into rolls, chilled and cut into the desired widths.

I claim:

1. A conformable, elastic, permanently tacky, pressure-sensitive adhesive tape comprising an elastic backing formed of interwoven warp and filling yarns and weighing when relaxed in the range of 100 to 300 grams per square yard, elastic warp yarns comprising elastomeric filaments distributed across the width of said backing and interspersed with nonelastomeric textile warp yarns in the ratio range of an elastomeric filament warp yarn every third warp yarn to an elastomeric filament warp yarn every sixth warp yarn, said warp yarns extending parallel to the longitudinal extension of said tape, filling yarns in said backing being nonelastomeric textile yarns extending normal to said warp yarns, said elastomeric filament warp yarns when relaxed being substantially shorter than said nonelastomeric warp yarns but having a stretched length at least equal to the extended length of said nonelastomeric warp yarns, the weave of said backing being such that said elastomeric warp yarns are interwoven to provide an average float length thereof on at least one side of said backing which exceeds the average float lengths for nonelastomeric textile warp yarns of said backing whereby said backing when relaxed assumes a surface configuration in which transverse corrugations occur along said elastomeric warp yarns, the floats thereof contracting to bridge the valleys of said corrugations, and a permanently tacky, pressure-sensitive adhesive adherent to one side of said backing with its exposed surface reflecting to a degree the rugosity of the underlying backing becoming more nearly planar when said tape is stretched and more rugose as said tape is permitted to relax.

2. The tape of claim 1, wherein the relaxed corrugated surface configuration takes the form of ridges and valleys extending transversely from edge to edge of said tape.

3. The tape of claim 1, having an adhesive side and a nonadhesive side and rolled, partially relaxed, upon itself, preserving to a degree the transverse ridges and valleys thereof in the convoluted roll, substantial portions of the nonadhesive side of said tape being out of contact with the adhesive side thereof, said substantially reduced contact enhancing the unrollability of said tape and reducing the probability of deleterious adhesive delamination.

4. The tape of claim 1, wherein a fully extended length thereof is greater than 135 percent of the relaxed length thereof.

5. The tape of claim 1, wherein the woven elastic backing, before coating with adhesive, may be stretched to a length 2.2 times its relaxed length with a stretching force applied warpwise of from about 0.3 to 1.0 pounds per inch width.

6. The tape of claim 1 wherein the warp yarns of the woven elastic backing are equivalent in size to cotton 30's and the filling yarns are equivalent to cotton 10's.

7. The tape of claim 1 wherein the warp yarns other than those with elastomeric cores are stretch nylon.

8. The tape of claim 1 wherein the side edges are smooth cut and ravel resistant.

9. The tape of claim 1 wherein the elastomeric warp yarns of the woven elastic backing float across a plurality of successive picks on the adhesive side.

10. The method of producing a conformable elastic permanently pressure-sensitive adhesive tape comprising forming a fabric by interweaving textile filling yarns with warp yarns consisting of stretched elastomeric yarns interspersed with normally tensioned textile yarns in a weave such that the stretched elastomeric warp yarns have an average float length on at least one side of said fabric which exceeds the average float length of other warp yarns on that side, layer-coating said fabric in the fully stretched condition with a permanently tacky, pressure-sensitive adhesive to produce an adhesive tape, subjecting portions of said tape, while spacially free to retract, to temperatures which soften said adhesive, whereby retraction of said elastomeric warp yarns occurs, said retraction forming said tape surfaces into a configuration in the form of transverse ridges and valleys thereby imparting enhanced elasticity and conformability to said tape.

11. The method of claim 10 wherein the layer coating with pressure-sensitive adhesive is a calendering method.

12. The method of claim 10 wherein the elastomeric core yarns are fully stretched when the fabric is woven.

13. The method of claim 10 wherein the fabric is back coated with an interrupted coating to which the adhesive has reduced adhesion and rolling said tape into adhesive rolls.

14. The method of claim 10 wherein the elastomeric core yarns are woven with a predominance of warp yarns of the weakness of 30's spun rayon.

15. The method of claim 10 wherein the elastomeric core yarns are woven with a predominance of warp yarns of the strength of 70/2 stretch nylon.

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