

UNITED STATES PATENT OFFICE

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FRICTION TAPE

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The present invention relates to adhesive tape and more particularly to the electrical insulating tape commonly known as friction tape.

The well-known electrician's friction tape, commonly used for wrapping splices in electrical wiring, has been made for many years from cotton cloth woven with a warp and filler and impregnated with an electrical insulating composition which is sufficiently tacky to adhere to smooth surfaces when the tape is applied thereto under pressure. Typically this tape is black in color and commonly has a width of about $\frac{3}{4}$ ". Such tape also is widely used for such purposes as wrapping the handles of tools, baseball bats and other articles at places where it is desired to protect the article or to provide a surface which can be grasped without slippage.

Such tape made from woven cotton cloth has been subject to the disadvantage that it is hard to tear. Further, when such tape is torn transversely, some of the threads, usually at the end of the tear, will before being severed pull out of the tape which remains on the roll so that the tape is frayed and imperfect when later unwound for use.

An object of my invention is to provide an inexpensive friction tape, which is flexible, will tear easily and cleanly in any direction and yet will have sufficient strength for the electrician's purposes and for other uses for which electrician's tape is commonly employed, such as wrapping tool handles and the like, and will have good dielectric and adhesive properties.

In accordance with the invention I have found that such a friction tape can be made by using as the base material a non-woven fabric consisting of intermingled cotton or rayon fibers which fibers are not sufficiently adhesive to form a coherent web. In my tape, these fibers are united into a dense coherent mass by regenerated cellulose distributed among the fibers by regeneration of the cellulose in situ from viscose, or other suitable source of regenerated cellulose. An example of such material is that now sold under the name "Viskon." A web of such material may be impregnated with any usual electric insulating adhesive composition to obtain thorough penetration of the fibrous base by the adhesive, assuring adequate bond strength between the adhesive and the base. The completed tape is flexible, may be torn easily and cleanly either transversely or longitudinally of the tape, and yet it possesses adequate strength for the usual wrapping operations to which such tape is subjected, and sufficient mechanical strength when in final posi-

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tion as a wrapping on a wire or cable or as a wrapping on a tool handle or the like. Moreover, a tape so made has improved dielectric properties because it is completely free from pinholes, which in the case of the conventional electrician's tape made from a woven textile material are frequently present at spaces between adjacent threads, and which detract from the effectiveness of such tape as a dielectric material.

The intermingled fibers which I employ may be of textile-making length and may be bleached or unbleached cotton fibers or rayon fibers, preferably of the regenerated cellulose type. Mixtures of different kinds of fibers of these types also are satisfactory.

My base material may be made by forming a web of the fibers, adding viscose to the web, either during its formation or by an impregnating operation on the completed web, and then regenerating cellulose from the viscose by passing the web through a conventional regeneration bath.

The adhesive impregnating composition is made from a milled rubber composition comprising about 50% reclaimed rubber such as whole tire reclaim, a suitable adhesive such as rosin or pine tar, fillers such as calcium carbonate or barium sulfate, and either carbon black or an organic pigment. An antioxidant may be included in the compound.

I prefer to form the backing web in a wide width of about 40 inches. The impregnating and coating composition is applied to both sides of this wide web on a calender. The composition also may be applied from solution by passing the web under a rubber spreader, coating first one side and then the other side of the web with the composition. I prefer to apply a second coat to one side of the web, and in some cases may double-coat both sides of the web. This second coat, or coats, also may be applied by calendering or from solution. After it has been coated, the web is rewound and then is slit to the width of tape desired, which normally is $\frac{3}{4}$ ".

I have found that tape formed as described above wraps very snugly even on sharply curved surfaces as it is flexible and capable of uniform stretch in both transverse and longitudinal directions. The tape may be torn easily by hand, either longitudinally or transversely, without raveling and is completely free from pinholes.

I claim:

A flexible, easily-tearable, electrical insulating friction tape comprising a supporting sheet member of unwoven intermingled, regenerated cellu-

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lose textile fibers bonded together by regenerated cellulose distributed among the fibers, and a reclaim rubber-containing electrical insulating adhesive composition impregnating said sheet, adhering to the fibers thereof and forming a coating on the surface thereof.

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