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COATED TEXTILE MATERIAL

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This invention relates to coated textile material and more particularly refers to garments and other articles of manufacture, made from fabrics coated with a plastic composition.

Heretofore it has been suggested to use coated material as a glass substitute. This material usually had a reticular metallic base and was advantageous chiefly because it was cheaper and could withstand much harder usage than ordinary glass. The metallic base had a heavy coating of plastic applied thereto and was relatively stiff although with respect to glass it might be termed flexible. In addition to being cheaper and more durable than glass, certain types of this material had the valuable property of transmitting ultra-violet light which is ordinarily intercepted by common glass. However, with the exception of these glass substitutes, which were chiefly used as windows in hothouses and over cold frames, no attempt has been made to adapt the light-transmitting properties of these plastics to objects wherein the human body would be benefited thereby.

It is an object of this invention to utilize the light-transmitting properties of certain plastics so that the human body will be benefited thereby. A further object is to produce garments and other articles from coated textile material. A still further object is to produce water-proof and durable material at a relatively low cost. An additional object is to produce coated textile material of exceptional and heretofore unobtainable flexibility. Additional objects will appear hereinafter.

These objects are accomplished by coating textile material, particularly the various types of cotton, with a plastic composition, preferably a composition comprising cellulose acetate and a multiplicity of plasticizers having a high solubility for each other and for cellulose acetate, which is capable of transmitting ultra-violet light down to a wave length of about 2800 angstroms but which intercepts the light rays having a shorter wave length and which are usually harmful to the skin.

It is well known that light having a wave length of between 2800 and 3200 angstroms is physiologically-beneficial, while rays having a wave length of less than 2800 angstroms are ordinarily harmful and at times produce severe and painful burns. I have found that by treating fabrics with various plastics, which I shall describe more fully in a subsequent part of the present application, and thereupon fashioning these coated fabrics into garments such as beach pajamas, and hats, as well as other articles such as sunshades and covers for children's play-yards, the beneficial components of the sun's rays are utilized to the fullest extent to the advantage of the human body, while at the same time the harmful components are intercepted and prevented from injuring the body.

In order to accomplish this result it is, of course, necessary to produce a coated material having exceptional and heretofore unobtainable flexibility, while at the same time retaining the valuable selective-light-transmitting properties of the coating. It is also desirable for the coated material to be waterproof, and capable of withstanding rough usage. I have accomplished this by coating numerous textile materials, among which are:

Tarlatan
Muslin de soie
Chiffon—printed and plain
Organdie
Tosca net
Silk
Rayon and cotton marquisette
Silk and rayon voile

with various plastic compositions, representative examples of which are the following:

(1) 150 gal. acetone
100 lbs. cellulose acetate
50 lbs. dimethyl phthalate

(2) 150 gal. acetone
100 lbs. cellulose acetate
25 lbs. diethyl phthalate
25 lbs. lindol (tricresyl phosphate)

(3) 150 gal. methyl acetone
100 lbs. cellulose acetate
17 lbs. triphenyl phosphate
17 lbs. dibutyl phthalate
17 lbs. diethyl phthalate

(4) 110 gal. methyl acetone
100 lbs. cellulose acetate
20 lbs. lindol (tricresyl phosphate)
40 lbs. triphenyl phosphate
40 lbs. dimethyl phthalate

In addition to these plastics, compositions containing substituents such as cellulose ethers, or urea-formaldehyde condensation products, or polymerized vinyl compounds, may be used with satisfactory results, although I prefer to use cellulose esters, particularly cellulose acetate.

Where cellulose acetate is used, acetone and methyl acetone are commonly used as solvents. In order to reduce the cost of these solvents it is possible to mix them with benzene and/or alcohol, in the case of acetone; and benzene and/or denatured alcohol, in the case of the methyl acetone. Where it is desired to produce articles which require a cloth-like appearance the solvent used for the plastic material should not be capable of dissolving the fabric.

The selection of plasticizers and the propor-

tions of such plasticizers depend to a large extent upon the uses which are to be made of the coated material. I have found that products of exceptional flexibility can be obtained by using a multiplicity of plasticizers which have a high solubility for each other and for the compound which is to be plasticized. Several of these plastic compositions having excellent flexibility have been herein described. In addition to the compounds mentioned there are many other well known compounds which behave similarly and which may be used according to the present invention.

By increasing the proportion of plasticizers with respect to the amount of material to be plasticized the flexibility of the resulting product is further increased. However, in some instances the flexibility of the product is thereby increased at the expense of the water-resisting properties. For instance, in the above-mentioned examples the proportion of mixed plasticizers to cellulose acetate in Example 4 is much greater than in Example 3. The composition described in Example 4 will produce a coated material of greater flexibility than the composition described in Example 3, but its resistance to water will be lower.

I have also found that material which is properly sized will, in general, produce a more flexible product than unsized or poorly sized material. This may be due to the increased penetration of plastic composition when the material is not properly sized. It is to be understood that I do not intend to limit myself to processes where only sized material is used or where the plastic composition contains more than one plasticizer, since some of the articles manufactured by my process need not possess as great flexibility as others, and may be made according to the present invention with unsized or slightly sized material and/or with only one plasticizer.

The plastic composition may be applied to the textile material by any of the usual methods. Such methods include brushing or flowing the composition onto the textile material, or passing this material through the liquid plastic. I have found that more uniform and satisfactory results are obtained if the plastic is applied to the fabric in an apparatus similar to that described in Patent No. 1,677,576, issued to Adolph Zimmerli, July 17, 1928. The treated material is then cut into pieces of the required size and shape for the desired article, and the article fashioned therefrom by any of the customary methods, such as sewing, gluing, etc.

Representative examples of the articles included within the scope of the present invention are the following:

Beach hats
Beach pajamas
Coats
Smocks
Blouse and skirt sets
Umbrellas
Ensembles
Capes
Beach robes
Raincoats
Covers for children's play-yards
Covers for boats
Covers for automobiles
Covers for baby carriages

Needless to say, there are numerous other articles which might have been included in the above list, but since they will readily occur to one skilled in the art upon reading the present application they have been omitted for the sake of brevity. However, it is to be understood that the scope of the present invention includes such articles and is not to be limited to the above examples, given merely for purposes of illustration. The material used in these articles will depend upon the particular article and the use to which it is to be put, as well as the price which is to be paid for it, and no difficulty should be encountered, in the light of the present description, in selecting the proper material and plastic for any given purpose. For example, tarlatan is useful for cheap hats or caps; muslin de soie may be used for a more expensive hat, also marquisette; tosca net has a very open weave and permits high light transmission; the voiles, both silk and rayon, give a product of excellent flexibility, very satisfactory for capes and hats. In some cases a closer weave may be desired than in others. For instance, beach pajamas and covers for children's play-yards would require a relatively open weave whereas a raincoat would require a closer weave.

The products of the present invention permit the human body to take full advantage of the physiologically-beneficial ultra-violet rays of the sun while excluding injurious portions of the sun's rays. They are waterproof, exceedingly flexible, and durable and may be produced at a very reasonable cost.

As many apparent and widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments thereof except as defined in the appended claims.

I claim:

1. An article of wearing apparel manufactured from a textile base coated with a water repellant plastic composition comprising a basic plastic and a plasticizer therefor consisting of a plurality of mutually soluble compounds selected from the group consisting of triphenyl phosphate, tricresyl phosphate, dimethyl phthalate, diethyl phthalate and dibutyl phthalate, in a quantity aproximately equal to the amount of basic plastic.

2. An article of wearing apparel manufactured from a textile base coated with a water repellant plastic composition comprising cellulose acetate and a plasticizer therefor consisting of a plurality of mutually soluble compounds selected from the group consisting of triphenyl phosphate, tricresyl phosphate, dimethyl phthalate, diethyl phthalate and dibutyl phthalate, in a quantity approximately equal to the amount of basic plastic.

3. A textile base coated with a water-repellant plastic composition comprising a basic plastic and a plasticizer therefor consisting of a plurality of mutually soluble compounds selected from the group consisting of triphenyl phosphate, tricresyl phosphate, dimethyl phthalate, diethyl phthalate and dibutyl phthalate, in a quantity sufficient to produce a fabric characterized by its flexibility.

4. A textile base coated with a water-repellant plastic composition comprising cellulose acetate and a plasticizer therefor consisting of a plurality of mutually soluble compounds selected from the group consisting of triphenyl phosphate, tricresyl phosphate, dimethyl phthalate, diethyl phthalate and dibutyl phthalate, in a quantity sufficient to produce a fabric characterized by its flexibility.

5. A textile base coated with a water-repellant plastic composition comprising a basic plastic and a plasticizer therefor consisting of a plurality of mutually soluble compounds selected from the group consisting of triphenyl phosphate, tricresyl phosphate, dimethyl phthalate, diethyl phthalate and dibutyl phthalate, in a quantity ranging from 50 to 100% of the basic plastic.

6. A textile base coated with a water-repellant plastic composition comprising cellulose acetate and a plasticizer therefor consisting of a plurality of mutually soluble compounds selected from the group consisting of triphenyl phosphate, tricresyl phosphate, dimethyl phthalate, diethyl phthalate and dibutyl phthalate, in a quantity ranging from 50 to 100% of the basic plastic.

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