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TREATMENT OF TEXTILES AND COMPOSITION USEFUL THEREFOR

Joseph Harrel Shipp and Joseph Edward Smith,
Wilmington, Del., assignors to E. I. du Pont de
Nemours & Company, Wilmington, Del., a corporation of Delaware

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This invention relates to aqueous dispersions of aliphatic hydrocarbons and more particularly to aqueous dispersions of petroleum waxes or mineral oils substantive to animal fibers, Nylon, cellulosic fibers, modified cellulosic fibers and paper, and capable of imparting water-repellent effects to them.

This invention has as an object the preparation of aqueous dispersions of petroleum waxes or mineral oils. A further object is the preparation of aqueous dispersions of petroleum waxes or mineral oils substantive to animal fibers, Nylon, cellulosic fibers, modified cellulosic fibers or paper, and capable of imparting water-repellent effects thereto. Other objects will appear hereinafter.

These objects are accomplished by the following invention. Petroleum waxes or mineral oils are mixed at a temperature above their melting point with an aqueous solution of partially saponified polyvinyl acetate by means of high speed agitation. The emulsion is circulated through a homogenizer at a temperature above the melting point of the wax or oil. It is then allowed to cool to room temperature if an elevated temperature has been used. The dispersions thus obtained are non-substantive to textile fibers.

Dispersions substantive to animal fibers or Nylon are obtained by including water-soluble multivalent metal or heavy metal salts and an acid in the solution of the saponified polyvinyl acetate. It is preferred to use substantial proportions of either aluminum acetate or aluminum formate and either acetic or formic acid with the saponified polyvinyl acetate to prepare wax dispersions capable of imparting water repellent effects to animal fibers and Nylon.

Dispersions substantive to animal fibers, Nylon, cellulosic fibers, modified cellulosic fibers and paper are obtained by including a cationic surface active agent in the solution of the saponified polyvinyl acetate. An increased degree of substantivity is obtained by including water-soluble multivalent metal or heavy metal salts and an acid, together with the cationic surface active agents in the solution of the saponified polyvinyl acetate. It is preferable to use substantial quantities of aluminum acetate or aluminum formate with either acetic acid or formic acid to prepare wax dispersions capable of imparting water repellent effects to animal fibers, Nylon, cellulosic fibers, modified cellulosic fibers and paper.

It is highly important that wax dispersions remain stable during application to textiles. If

the wax dispersions separate agglomerated particles, wax spots frequently are visible on the finished goods. Goods manufactured from viscose process rayon and cellulose acetate rayon are particularly liable to show wax spots if any difficulty with stability of the dispersions during processing occurs. It is also highly advantageous that the wax dispersions have a high affinity for textile fibers so that the dispersions will be exhausted from a dilute bath by the goods by a process analogous to dyeing. Substantive wax dispersions are particularly of advantage for use on woollens, hosiery and rayon knit goods, since these goods cannot be handled conveniently on a quetsch.

Glue and casein have been used as emulsifying agents in preparing wax dispersions. The use of these materials has been accompanied by considerable difficulty due to lack of stability of the dispersions to storage; an even greater difficulty has been the lack of stability of the dilute dispersions during continuous application to goods by impregnation through a quetsch. Glue or casein are highly water soluble and, if used in sufficient quantities to maintain stable wax dispersions, have a marked tendency to lower the efficiency of the dispersions for obtaining water repellent effects.

Aluminum salts have been added to wax dispersions in substantial quantities to improve the degree of water repellency obtained on application of the compositions to textiles. There has been considerable difficulty in using glue or casein to prepare wax dispersions containing aluminum salts that have a satisfactory degree of substantivity to animal fibers. Large concentrations of glue or casein are required to stabilize wax dispersions containing substantial amounts of aluminum salts. The concentrations of glue or casein required to stabilize wax dispersions containing aluminum salts also retard the rate of exhaustion of the dispersions from a dilute bath onto animal fibers so markedly that it frequently is not practical to apply them.

It is known that polyvinyl alcohol derivatives have emulsifying properties. The term polyvinyl alcohol describes a class of products which is derived by the saponification of polyvinyl acetate. The properties of the different derivatives may vary widely and depend on the degree of polymerization of the polyvinyl acetate used as starting material as well as on the degree of saponification secured. Some products are highly soluble in cold water but insoluble in hot water, while others are relatively insoluble in cold water

but are soluble in hot water. Some products are rather easily precipitated by aluminum salts while others are resistant to precipitation. Products which show such wide variations in physical properties exhibit variations in their capacity to act as emulsifying and dispersing agents.

It was found in this invention that a selected group of polyvinyl alcohol derivatives can be used to prepare aqueous dispersions of paraffin waxes and mineral oils of excellent stability even in the presence of high concentrations of aluminum salts. The group of polyvinyl alcohol derivatives that is satisfactory for use in preparing dispersions of paraffin waxes and mineral oils is characterized by having a saponification number in the range of approximately 80 to 245 and by producing an aqueous solution of 4% concentration which has a viscosity of approximately 20 to 40 centipoises at 20° C. The preferred saponification number is in the range 135 to 180. Polyvinyl alcohol products which fall outside the described limits may produce dispersions which have good initial stability but which separate in storage. It is preferable to use sufficient polyvinyl alcohol to give a concentration in the range 1.5% to 5% in the finished dispersion. Higher concentrations of polyvinyl alcohol can be used provided a high viscosity in the dispersed phase is not objectionable. Lower concentrations of polyvinyl alcohol may produce dispersions of good stability initially but of poor stability to storage. The concentration of wax or oil in the dispersion should be in the range approximately 20% to 50%. If the concentration of wax or oil is much below 20%, the dispersion has poor stability to storage. As much as 15% of aluminum triacetate and acetic acid can be added to the dispersions without a detrimental effect on their stability.

Dispersions prepared with polyvinyl alcohol have very poor substantivity for textile fibers and cannot be applied by a process of exhaustion from a long bath. The addition of aluminum acetate or aluminum formate to dispersions prepared using polyvinyl alcohol makes them highly substantive to animal fibers and Nylon. The aluminum salts also increase the effectiveness of the composition for producing water repellent finishes on textiles. Dispersions substantive to cellulosic fibers and modified cellulosic fibers as well as animal fibers and Nylon are prepared using a cationic surface active agent along with the polyvinyl alcohol. The substantivity of these dispersions for cellulosic fibers is further increased by the addition of aluminum salts.

Dispersions prepared using polyvinyl alcohol under the limits described are generally stable to storage. However, in some instances dispersions may show separation of a soft, highly viscous concentrated phase at the top on standing several months. The viscous layer can be stirred in readily. The stability of such dispersions can be further improved by including a relatively small amount of soap along with the polyvinyl alcohol. The amount of soap used may vary from 0.5% to 2.5% on the weight of the polyvinyl alcohol. Aluminum salts may be added to dispersions containing soap in the described amounts without affecting their stability. A second class of compounds which have a stabilizing action on dispersions of waxes and oils prepared with polyvinyl alcohol is represented by such materials as di(butoxy ethyl) phthalate, di(methyl cyclohexyl) adipate, and butyl phthalyl butyl glycolate. The use of more than 5% of these materials on the weight of the wax may have a

detrimental effect on the water repellency of finishes obtained from these compositions.

It has been observed that positively charged wax dispersions, even of the generally excellent stability of those described herein, may tend to separate small agglomerated particles under adverse conditions and produce spotting on goods after several hundred yards are processed through a bath. This lack of perfect stability to running is usually due to local conditions such as the presence of sulfates in the water or to residual sulfonated or sulfated oils and fats on the goods. The difficulty can be overcome by the use of a cationic surface active agent as a stabilizer in the bath. The surface active agent produces satisfactory results in amounts of 1.0% to 10% on the weight of the dispersed phase. Satisfactory cationic agents are long chain alkyl ammonium compounds, long chain alkyl pyridinium compounds, and the condensation product of diethanolamine and stearic acid after-treated with dimethyl sulfate (U. S. Patent 2,096,749).

The wax or mineral oil dispersions or emulsions are prepared by the following procedure: The materials to be emulsified are liquefied by heating above their melting point if necessary. This liquid phase is then mixed with an aqueous solution of the polyvinyl alcohol derivative at a temperature at least 10° C. higher than the melting point of the material to be emulsified. The mixing is carried out by high speed agitation. The dispersion is homogenized at a temperature above the solidification point of the dispersed phase by several passes through a disper mill or by forcing through a small orifice under pressure up to 200 lbs. per square inch. The dispersion is then allowed to cool to room temperature if an elevated temperature has been used.

The following examples illustrate the invention but are not intended to limit it in any way. Parts are given by weight except where it may be otherwise indicated.

Example 1

Twenty-five parts of refined paraffin wax, M. P. 132° F., were melted and added while mixing to 75 parts of an aqueous solution containing 2.5 parts of polyvinyl alcohol at 170° F. The temperature of the solution was maintained by heating in a jacketed pot with steam. The mixture was agitated for 3 minutes, then passed four times through a Travis disper mill and allowed to cool. The effect of different polyvinyl alcohols on the stability of the resulting dispersions during storage is summarized in the following table:

Effect of different polyvinyl alcohols on stability of wax dispersions

Number	Polyvinyl alcohol		Stability		
	Saponification number	Viscosity for 4% aqueous solution, C. P.	Initial	One week	One month
1	0-10	20	Good	Separated	
2	80	20	do	Slight separation.	Slight separation.
3	110	20	do	do	Do.
4	135	20	do	do	Do.
5	245	20	do	do	Do.
6	0-10	40	do	Separated	
7	80	40	do	Good	Good.
8	180	40	do	do	Do.
9	250	40	Bad	do	

Example 2

Twenty-five parts of refined paraffin wax, M. P. 132° F., were emulsified by the method of Example 1, using 75 parts of an aqueous solution containing 2.5 parts of polyvinyl alcohol, 6.4 parts of basic aluminum acetate and 2.8 parts of acetic acid. The effect of different polyvinyl alcohols on the stability of the resulting dispersions during storage is summarized in the following table:

Effect of different polyvinyl alcohols on stability of wax dispersions containing aluminum acetate

Number	Polyvinyl alcohol		Stability		
	Saponification number	Viscosity for 4% aqueous solution, C. P.	Initial	One week	One month
1.....	0-10	20	Separated.	-----	-----
2.....	80	20	Good.....	Good.....	Good.....
3.....	110	20	do.....	do.....	Do.....
4.....	135	20	do.....	do.....	Do.....
5.....	245	20	do.....	do.....	Do.....
6.....	0-10	40	Separated.	-----	-----
7.....	180	40	Good.....	Good.....	Good.....
8.....	250	40	Separated.	-----	-----

Example 3

Twenty-five parts of Asiatic wax, M. P. 156° F., were melted and added while mixing to 75 parts of an aqueous solution containing 2.5 parts of polyvinyl alcohol, 6.4 parts of basic aluminum acetate and 2.8 parts of acetic acid at 180° F. The polyvinyl alcohol had a saponification number of 180 and a 4% aqueous solution had a viscosity of 40 C. P. at 20° C. The temperature of the solution was maintained during agitation by heating in a jacketed pot with steam. The emulsion was formed and homogenized as in Example 1. The dispersion obtained on cooling was stable to storage.

Example 4

Crude scale wax, M. P. 122° F. was substituted for the Asiatic wax in Example 3. The dispersion obtained was stable to storage.

Example 5

12.5 parts of crude scale wax and 12.5 parts of petrolatum were emulsified by the method of Example 1, using 75 parts of an aqueous solution containing 2.5 parts of polyvinyl alcohol, 6.4 parts of basic aluminum acetate and 2.8 parts of acetic acid. The polyvinyl alcohol had a saponification number of 135 and gave a 4% aqueous solution with a viscosity of 20 C. P. at 20° C. The dispersion was essentially stable on storage for one month although a viscous waxy layer formed on the top.

Example 6

A dispersion was prepared as in Example 5 but including 0.025 part of a sodium palmitate soap in the solution of emulsifying agent in addition to the other ingredients used in Example 5. The dispersion was stable on storage and remained uniform in character throughout after a month.

Example 7

11.87 parts of crude scale wax, 11.87 parts of petrolatum and 1.26 parts of di-(methyl cyclohexyl) adipate were emulsified as in Example 5. The dispersion was stable to storage and remained entirely uniform in appearance after one month.

Di(butoxy ethyl) phthalate and butyl phthalyl

butyl glycolate were substituted for the di-(methyl cyclohexyl) adipate to obtain similar results.

Example 8

An equal weight of Nujol was used instead of the petrolatum in Example 6. A stable dispersion was obtained.

Example 9

25 parts of petrolatum were used instead of the wax and petrolatum in Example 6. A stable dispersion was obtained.

Example 10

25 parts of Nujol were used instead of the wax and petrolatum in Example 6. A stable dispersion was obtained.

Example 11

25 parts of refined paraffin wax were emulsified by the method of Example 2 with 75 parts of an aqueous solution containing 2.5 parts of polyvinyl alcohol and 0.5 part of stearyl trimethyl ammonium bromide. A stable dispersion was obtained.

Example 12

Cetyl pyridinium bromide was substituted for the stearyl trimethyl ammonium bromide in Example 11. A stable dispersion was obtained.

Example 13

The condensation product of diethanolamine and stearic acid reacted with dimethyl sulfate described in U. S. Patent 2,096,749, was substituted for the stearyl trimethyl ammonium bromide in Example 11. A stable dispersion was obtained.

Example 14

25 parts of refined paraffin wax were emulsified by the method of Example 2 with 75 parts of an aqueous solution containing 2.5 parts of polyvinyl alcohol, 0.5 part of stearyl trimethyl ammonium bromide, 3 parts of basic aluminum acetate and 1.2 parts of acetic acid. A stable dispersion was obtained.

Example 15

The condensation product of diethanolamine and stearic acid reacted with dimethyl sulfate (U. S. Patent 2,096,749) was substituted for the stearyl trimethyl ammonium bromide in Example 14. A stable dispersion was obtained.

Example 16

The reaction product of trimethyl amine and alpha brom stearic acid (U. S. Patent 2,129,264, Example 1) was substituted for the stearyl trimethyl ammonium bromide in Example 14. A stable dispersion was obtained.

Example 17

Cetyl pyridinium bromide was substituted for the stearyl trimethyl ammonium bromide in Example 14. A stable dispersion was obtained.

Example 18

(a) Five parts of product No. 4 of Example 1 were dispersed in 95 parts of water. A strip of cotton broadcloth was impregnated with the dispersion to obtain a 100% increase in weight. The impregnated goods were dried under a hot iron. A water repellent effect was obtained on the goods.

(b) Five parts of product No. 4 of Example 2 were dispersed in 95 parts of water and applied

to cotton broadcloth as in (a). An excellent, water repellent finish was obtained.

Example 19

(a) 0.5 gram of product No. 4 of Example 2 was dispersed in 200 cc. of water at 100° F. A ten gram strip of wool Melton was immersed in the bath and turned for 15 minutes. More than 80% of the product was exhausted from the bath by the wool as judged by a turbidity test. The goods were hydroextracted and dried on a mangle at about 260° F. The water absorbency, in a standard immersion test, for the untreated goods was more than 100% and for the treated goods was less than 25%.

(b) 0.5 gram of the product of Example 3 was dispersed in 200 cc. of water at 90° F. A ten gram silk stocking was immersed in the bath and the bath agitated for 15 minutes. More than 90% of the dispersion exhausted from the bath onto the stocking. The stocking was hydroextracted and dried on a form heated to 200° F. The treated stocking was highly water repellent.

(c) 0.5 gram of the product of Example 3 was dispersed in 200 cc. of water at 100° F. and the pH of the bath adjusted to 6.0. A ten gram Nylon stocking was immersed in the bath and the bath agitated while raising the temperature to 130° F. Agitation was continued for 30 minutes. More than 75% of the dispersion was absorbed. The stocking was hydroextracted and dried on a form, heated to 200° F. The treated stocking was highly water repellent.

Example 20

(a) 0.5 gram of the product of Example 13 was dispersed in 200 cc. of water at 100° F. A ten gram strip of wool Mtelton was entered in the bath and the bath agitated for 15 minutes. More than 75% of the dispersion was exhausted from the bath by the wool. The wool was hydroextracted and dried on a mangle. The water repellency of the fabric was improved.

(b) 0.5 gram of the product of Example 13 was dispersed in 200 cc. of water at 120° F. A ten gram Nylon stocking was entered in the bath and the bath agitated for 20 minutes. More than 70% of the dispersion was exhausted from the bath by the Nylon. The stocking was hydroextracted and dried on a form heated to 200° F. A smooth, full hand was obtained on the stocking. The water repellency of the stocking was improved.

(c) 0.5 gram of the product of Example 13 was dispersed in 200 cc. of water at 100° F. A ten gram strip of knitted rayon glove fabric was entered in the bath and the bath agitated for 20 minutes. More than 70% of the dispersion was exhausted from the bath by the goods. The treated goods were hydroextracted and dried on a mangle heated to about 240° F. A smooth, full hand was obtained on the goods. The fabric was water repellent.

Example 21

(a) 0.5 gram of the product of Example 15 was dispersed in 200 cc. of water at 100° F. and applied to a ten gram strip of wool Melton as in Example 19a. More than 85% of the dispersion was exhausted from the bath by the goods. The treated goods were hydroextracted and dried on a mangle at 240° F. The treated fabric had a high degree of water repellency.

(b) 0.5 gram of the product of Example 15 was dispersed in 200 cc. of water at 90° F. and

applied to a 10 gram silk stocking as in Example 19b. More than 90% of the dispersion was absorbed by the stocking. The treated stocking was highly water repellent.

(c) 0.5 gram of the product of Example 15 was dispersed in 200 cc. of water at 100° F. and applied to a 10 gram Nylon stocking as in Example 19c. More than 75% of the dispersion was absorbed. The treated stocking was highly water repellent.

(d) 0.5 gram of the product of Example 15 was dispersed in 200 cc. of water at 100° F. and applied to a 10 gram strip of knitted glove fabric as in Example 20c. More than 75% of the dispersion was absorbed. A smooth, full hand was obtained on the goods. The fabric had an excellent degree of water repellency.

(e) 0.5 gram of the product of Example 15 was dispersed in 200 cc. of water at 100° F. and applied to a 10 gram strip of cellulose acetate piece goods as in 21d. More than 75% of the dispersion was absorbed. The fabric was dried by pressing under a cloth with a hot iron. An excellent water repellent effect was obtained on the fabric.

(f) 50 grams of bleached sulfite pulp was placed in a beater in 1.8 liters of soft water and the bath was adjusted to a pH of 7.0. Two grams of the product of Example 17 was dispersed in 150 grams of water and added to the beater. The pulp, water and dispersion were agitated 20 minutes at 70° F. The resulting mass was removed from the beater, filtered and the amount of dispersed material retained by the paper was determined by a comparison of the turbidity of the filtrate with that of standards of known concentration. About 90% of the dispersed phase was exhausted from the bath onto the fibers. The water repellency of the paper made with the pulp was much greater than that of paper prepared without the use of the wax dispersion.

Example 22

7.5 parts of the product of Example 6 were mixed with 0.15 part of the condensation product of diethanolamine and stearic acid reacted with dimethyl sulfate (U. S. Patent 2,096,749). The mixed product was diluted with 92.35 parts of water. A portion of the diluted dispersion was added to a 15 gallon pad box at 120° F. and used to impregnate viscose process rayon taffeta piece goods. The goods were impregnated by passing into the bath, then running between rubber squeeze rolls arranged so that the bottom roll dipped in the bath, and drying on a tenter frame at 240° F. A batch of 5000 yards of the goods was impregnated and dried without developing wax spots or oil spots on the goods. The goods absorbed about 40% of the dilute bath on their weight. An excellent water repellent effect was obtained. The goods had a full- soft hand.

In a similar run made omitting the use of the condensation product of diethanolamine and stearic acid reacted with dimethyl sulfate, the bath lacked stability and spotting of the goods occurred after running 500 yards.

In dissolving the polyvinyl alcohol in water for use as an emulsifying agent, it is advantageous to use 0.25% to 2% of a water soluble surface active agent on the weight of the polyvinyl alcohol to act as an assistant in markedly accelerating the rate of solution of the polyvinyl alcohol. Suitable materials are the alkali metal and amine salts of sulfated fatty alcohols, sulfonated mineral oils, long chain alkyl sulfonates,

fatty acids, and long chain alkyl betaine derivatives. The use of these products in the described amounts has no deleterious effect on the wax or oil emulsions formed even when aluminum and heavy metal salts are present.

Aluminum salts of volatile organic acids are preferable for use with waxes and oils to obtain water repellent effects. The aluminum salt also acts to promote substantivity to animal fibers and Nylon and used in conjunction with cationic surface active agents promotes substantivity to cellulosic and modified cellulosic materials as well. Water soluble salts of metals as barium, strontium, antimony, bismuth, lead, tin, cobalt, nickel, iron, chromium, zinc, and thallium may also be added to emulsions and dispersions to promote substantivity.

The cationic surface active agents satisfactory for use in this invention include long-chain alkyl pyridinium compounds, long-chain alkyl ammonium, phosphonium and sulfonium derivatives and long-chain alkyl betaines. It is preferred that the length of the alkyl chain be 10 to 18 carbon atoms.

The metal salts and cationic surface active agents can be added separately during the emulsification step or they can be added simultaneously with the polyvinyl alcohol.

Cationic surface active agents can be added to positively charged dispersions to act as stabilizers during application to textiles. For example, long-chain alkyl pyridinium compounds as cetyl pyridinium bromide, long-chain alkyl ammonium compounds as stearyl trimethyl ammonium bromide, long chain phosphonium and sulfonium derivatives and long chain alkyl betaines may be used. It is preferred that the length of the alkyl chain be 10 to 18 carbon atoms.

This invention is used to prepare dispersions of waxes and oils that produce a high degree of water repellency when applied to textiles and paper. The dispersions can also be economically applied to obtain a wide variety of finishing effects combining fullness, softness, pliability and lubrication on textiles.

Dispersions prepared by the processes described herein are unusually stable during application to textiles by a padding operation. The water repellent compositions are a distinct improvement for stability during application compared with known products of equal effectiveness.

Dispersions with a high degree of substantivity for cellulosic fibers, modified cellulosic fibers and paper, in addition to animal fibers and Nylon, can be prepared. The preparation of dispersions of waxes and oils of sufficient substantivity for cellulosic materials to be applicable from a long bath represents a distinct advance in the art.

Polyvinyl alcohol is not subject to deterioration on aging nor does it promote the growth of mold. As a result the finishes prepared using this material as emulsifying agent are much less susceptible to development of odor or of mold growth than are dispersions prepared with gelatine or casein. This is an important factor in treating fabrics or paper to be used in wrapping food. By this invention it is possible to prepare water repellent finishes with a high degree of effectiveness which, by virtue of their substantivity, are quite economical to apply to textile fibers and paper and are highly resistant to bacterial action on aging.

The above description and examples are intended to be illustrative only and not to limit

the scope of the invention. Any departure therefrom which conforms to the spirit of the invention is intended to be included within the scope of the appended claims.

5 We claim:

1. An aqueous dispersion of an aliphatic hydrocarbon selected from the group consisting of mineral oils, petrolatums and petroleum waxes wherein the active dispersing agent is a polyvinyl alcohol derivative having a saponification number in the range of approximately 80 to 245 and having a viscosity of approximately 20 to 40 centipoises in a 4% aqueous solution at 20° C.

2. A process of making textile fabrics water repellent which comprises applying thereto an aqueous dispersion as defined in claim 1.

3. An aqueous dispersion of a higher aliphatic petroleum hydrocarbon that has been prepared by dispersing a higher aliphatic petroleum hydrocarbon selected from the group consisting of mineral oils, petrolatums and petroleum waxes in an aqueous solution of a polyvinyl alcohol derivative having a saponification number in the range of approximately 80 to 245 and a viscosity of approximately 20 to 40 centipoises at a 4% concentration at 20° C.

4. An aqueous dispersion of a higher aliphatic petroleum hydrocarbon that is substantive to textile fibers which has been prepared by dispersing a higher aliphatic petroleum hydrocarbon selected from the group consisting of mineral oils, petrolatums and petroleum waxes in the presence of an aqueous solution containing a multivalent water soluble salt and a polyvinyl alcohol derivative having a saponification number in the range of approximately 80 to 245 and a viscosity of approximately 20 to 40 centipoises at 4% concentration at 20° C.

5. A process of making textile fabrics water repellent which comprises applying thereto the dispersed hydrocarbon from the aqueous dispersion defined in claim 4.

6. An aqueous dispersion of a higher aliphatic petroleum hydrocarbon that is substantive to textile fibers which comprises a dispersion of a higher aliphatic petroleum hydrocarbon selected from the group consisting of mineral oils, petrolatums and petroleum waxes in an aqueous solution containing a cationic surface active agent and a polyvinyl alcohol derivative having a saponification number in the range of approximately 80 to 245 and a viscosity of approximately 20 to 40 centipoises at 4% concentration at 20° C.

7. A process of making textile fabrics water repellent which comprises exhausting thereupon the dispersed hydrocarbon from the aqueous dispersion defined in claim 6.

8. An aqueous dispersion of a higher aliphatic petroleum hydrocarbon that is substantive to textile fibers which comprises a dispersion of a higher aliphatic petroleum hydrocarbon selected from the group consisting of mineral oils, petrolatums and petroleum waxes in an aqueous solution containing a cationic surface active agent, a multivalent water soluble salt, and a polyvinyl alcohol derivative having a saponification number in the range of approximately 80 to 245 and a viscosity of approximately 20 to 40 centipoises at 4% concentration at 20° C.

9. A process of making textile fabrics water repellent which comprises exhausting thereupon the dispersed hydrocarbon from the aqueous dispersion defined in claim 8.

10. A dispersion of a higher aliphatic petroleum hydrocarbon selected from the group con-

sisting of mineral oils, petrolatums and petroleum waxes in an aqueous solution containing a cationic surface active quaternary ammonium compound, aluminum acetate, acetic acid, and a partially saponified polyvinyl acetate having a saponification number in the range of approximately 80 to 245 and a viscosity of approximately

20 to 40 centipoises at 4% concentration at 20° C., said dispersion being substantive to textile fabrics and capable of imparting water repellent effects thereto.

JOSEPH HARREL SHIPP.
JOSEPH EDWARD SMITH.