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POLYESTER DYEING WITH POLYCHLOROBENZENE-ARYL GLYCOL ETHER DYE SOLUTION AND SAID DYE SOLUTION

Donald J. Delano and Frank J. Dombik, Cheektowaga, N.Y., assignors to Allied Chemical Corporation, New York, N.Y., a corporation of New York
No Drawing. Filed Sept. 17, 1963, Ser. No. 309,385
7 Claims. (Cl. 8—55)

The present invention relates to novel dyestuff compositions and to improved methods of dyeing synthetic hydrophobic materials therewith.

The dyeing, especially the continuous dyeing of synthetic hydrophobic materials such as linear polyester fibers e.g. fibers of polyethylene terephthalate, is difficult, since the inert chemical structure of such materials presents little attraction for dye molecules. Moreover these materials do not swell in water so that diffusion of the dye into the materials from an aqueous system is slow.

These difficulties can be overcome by employing special dyeing techniques to accelerate diffusion of dye into the material. For example, linear polyester fibers can be dyed by application of superatmospheric pressure (pressure dyeing) or more rapidly and effectively by application of extreme temperatures, ca. 200° C. (Thermosol Process). The rapidity of the latter dyeing method makes it particularly well adapted to continuous dyeing of polyester fiber. However, the foregoing procedures have the disadvantage of requiring complex and costly dyeing equipment.

Further, it is known to dye polyester fibers with acetate dyestuffs in the presence of a carrier i.e. an organic solvent which swells the fiber or acts to decrease the intermolecular attraction forces of the fiber molecules and thus to accelerate the dyeing. Use of the carrier as solvent for dye in a non-aqueous system is generally not feasible commercially due to the large amounts of expensive carrier required. On the other hand use of a relatively small charge of carrier in an aqueous bath containing a dispersed acetate dye gives a relatively weak dyeing and requires an excessively long dyeing time. Some of the disadvantages of the foregoing procedures have been overcome by dyeing linear polyester fibers in a dyebath composed of an aqueous emulsion of a solvent solution of dye stabilized by an emulsifying agent (Peirent et al., American Dyestuff Reporter, 49, 72 (1960)). This process, commonly referred to as the "Solvent Emulsion Technique," requires only a relatively small quantity of costly solvent, since the external aqueous phase of the emulsion acts as a vehicle to distribute the small amount of dye-carrier solution among the fibers. The "Solvent Emulsion Technique" nevertheless requires a much longer dyeing time than the aforementioned Thermosol Process and consequently does not provide heavy dyeings when utilized for continuous dyeing of polyester materials as, for example, in the well-known pad-steam process.

Numerous carrier compositions have been developed by the prior art but these, in general, have objectionable features which restrict their use in carrier dyeing of polyester fibers and especially as dye solvents in dyeing according to the "Solvent Emulsion Technique." Some well-known effective carriers, e.g. di- and trichlorobenzene are relatively poor solvents for acetate dyestuffs. Because of the low solubility of acetate dyes in such carriers, large amounts of these carriers must be employed in Solvent Emulsion dyeing to dissolve the quantity of dyestuff required for deep dyeings. Inasmuch as dye absorption by a polyester fiber diminishes as the concentration of carrier in the Solvent Emulsion dye-

bath passes above a certain level, the depth of shade obtainable is severely limited. Moreover, the high concentrations of carrier required are prohibitively costly, adversely affect the levelness of the dyeing as well as the handle and dimensional stability of the fabric and may introduce obnoxious odors into the dyed goods. Other known compositions, e.g. β -phenoxyethanol, which are good solvents for acetate dyes only weakly accelerate dyeing of polyester fibers and hence cannot be employed for continuous dyeing.

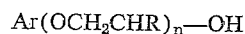
The principal object of the present invention is to devise novel dye solutions especially suited to dyeing synthetic hydrophobic materials.

An additional object of the present invention is to devise an improved process for dyeing synthetic hydrophobic materials according to the "Solvent Emulsion Technique."

A still further object of the present invention is to devise an improved continuous process for dyeing synthetic hydrophobic materials.

These and additional objects and advantages will be apparent from the following description of our invention.

We have discovered novel dye solutions are especially suitable for dyeing linear polyester fibers by the Solvent Emulsion procedure. These novel solutions comprise at least one acetate dyestuff; at least one aryl glycol ether which may be represented by the general formula:



wherein R is a member of the group consisting of hydrogen and methyl, n is an integer of from 1 to 2, and Ar is an aromatic hydrocarbon radical of the benzene series which may contain further substituents such as halogen and lower alkyl; and a polychlorobenzene of the group consisting of dichlorobenzene and trichlorobenzene. Particularly useful compositions are those containing about 0.3 to 4 parts and especially about 1 part by weight of polychlorobenzene per part by weight of aryl glycol ether. Mixtures of polychlorobenzene and aryl glycol ether which are liquids at about ambient temperature are especially suited for preparing the novel dye solutions of the present invention.

An important feature of the above-described novel compositions is the synergistic solvent action exerted by the aryl glycol ether and the polychlorobenzene on the acetate dyestuff. Because of this synergistic action considerably more acetate dye is placed in solution and thus deeper shades may be obtained. The synergistic action is demonstrated as follows: using the dyestuff N-ethyl-N (β -cyanoethyl)-4(4-nitro 2,6-dichlorophenylazo)aniline at room temperature 3.9 gms. were dissolved in 100 gms. of β -phenoxy ethanol, 2.5 gms. were dissolved in 100 gms. of trichlorobenzene and 4.3 gms. were dissolved in a mixture of 50 gms. of β -phenoxy ethanol and 50 gms. of trichlorobenzene. Thus while it would be expected that only 3.2 gms. would be dissolved by the mixture, actually 4.3 gms. were dissolved.

The novel compositions of the present invention are readily prepared by mixing at ambient temperature or, if desired, at temperatures up to about 90° C., the aryl glycol ether and polychlorobenzene with an amount of dye in excess of the total solubility of the dye in the solvent. The mixture is then filtered at ambient temperature to remove undissolved dye. The resulting solution may be diluted as desired by addition of the aryl glycol ether and/or polychlorobenzene solvents.

The dyestuffs used in novel compositions of the present invention are water insoluble dyes normally used to dye cellulose acetate. Commercial acetate dyes generally contain substantial amounts of admixed dispersing agents,

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e.g. sodium lignosulfonate and sodium salt of formaldehyde-naphthalene sulfonic acid condensate, which impede solution of the color in aryl glycol ether-polychlorobenzene solvent and form films, tars, or scums therein. For these reasons the free color bases of acetate dyestuffs i.e. dyestuffs substantially devoid of such dispersing agents should be used in preparing the instant solutions. The use of free color base also avoids the costly milling operations e.g. sand grinding that are generally used to render commercial acetate dyes dispersible. Mixtures of dyestuffs as well as single dyestuffs may be employed in preparing the novel compositions of the invention.

The amount of dye in the novel compositions of the invention is not critical and may be varied over a wide range depending on the depth of shade desired. However, to obtain heavy dyeings the maximum concentration of the dye in the instant solutions is desirable. Since the aryl glycol ether-polychlorobenzene mixture manifests a

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continuous dyeing these novel solutions provide heavy colorations using conventional dyeing equipment without use of extreme temperatures and pressures. Moreover the present dye compositions, since they contain less polychlorobenzene for a given weight of dye than do dye solutions containing pure polychlorobenzene as solvent substantially diminish the disadvantages arising from use of polychlorobenzene carrier in dyeing e.g. fiber shrinkage, obnoxious odor etc.

The following examples illustrate the present invention. Parts and percentages are by weight unless otherwise indicated and temperatures are in degrees centigrade.

Example 1

Dye solutions as shown in Table I were prepared by dissolving the pure color base acetate dyestuffs and one part oleic acid in the solvents at ambient temperature and filtering the resulting solutions.

TABLE I

Solution	Dyestuff (color base)	Solvent
1-----	10 parts of 4-amino-3-nitro-N-phenylbenzene sulfonamide.	44.5 parts β -phenoxyethanol 44.5 parts of a mixture of o-dichlorobenzene and a small amount of p-dichlorobenzene (Solvent 74).
2-----	5.0 parts of 4-amino-3-nitro-N-phenylbenzene sulfonamide, 5.0 parts of a dyestuff as defined by claim 7 of U.S.P. 2,072,252.	44.5 parts β -phenoxy-ethanol, 44.5 parts of technical trichlorobenzene (substantially the 1,2,4 isomer containing a small amount of the 1,2,3 isomer).
3-----	3.33 parts of N-ethyl-N (β -cyanoethyl) 4-(4-nitro-2-chlorophenylazo) aniline, 3.33 parts of N-ethyl-N (β -cyanoethyl)-4-(4-nitro 2,6-dichlorophenylazo) aniline, 3.3 parts of 4-amino-3-nitro -N-phenylbenzene sulfonamide.	Do.
4-----	10 parts of a dyestuff as defined in claims 6 and 7 of U.S.P. 2,785,157.	44.5 parts β -phenoxyethanol, 44.5 parts of technical trichlorobenzene (substantially the 1,2,4 isomer containing a small amount of the 1,2,3 isomer).
5-----	2.5 parts of each of a blue and a violet dyestuff of the above class.	47 parts of β -phenoxyethanol, 47 parts of technical trichlorobenzene.

synergistic solvent action toward acetate dyestuffs, the maximum concentration at ambient temperature of color in the present solutions depending on the solubility of the dyestuff is normally at least about 1.5%, generally about 4% or more and often as high as 5-10% by weight. Frequently mixtures of dyes have a greater maximum solubility in the aryl glycol ether-polychlorobenzene mixture than the individual dyestuffs.

The novel dye compositions of the invention are well suited to be applied to fibers according to the "Solvent Emulsion Technique," i.e. the dye solutions are converted to stable aqueous emulsions in the presence of a suitable emulsifying agent, e.g. an anionic emulsifying agent. These oil in water emulsions in which the oil phase is the dye solution can be employed as dyebaths in single step dyeing, e.g. beck dyeing, package dyeing, or as pad liquors in continuous two step dyeing e.g. the pad-steam process.

While the novel dye solutions of the present invention are especially suitable for dyeing fabrics, fibers, films and foils of polyester composition, e.g. polyethylene terephthalate (e.g. Dacron 54, Dacron 64), the polymer of 1,4 cyclohexanedimethanol and terephthalic acid (Kodel), and the copolyester of ethylene glycol and terephthalic and iso-phthalic acids (Vycron) they also can be used to dye other synthetic hydrophobic fibers, e.g. cellulose acetate, cellulose triacetate, polycaprolactam (Caprolan), polyhexamethylene adipamide (nylon 66), polypropylene and polyacrylonitrile (Orlon). The instant dye solutions also provide excellent dyeings of polyester and other synthetic fibers in blends with cotton and wool.

Our novel dye solutions dye polyester and other synthetic hydrophobic fibers in level deep shades of excellent fastness to light, washing, dry cleaning and crocking. In

In separate dyeing experiments about 58 parts of each of the above dye solutions, about 40 parts of an aqueous solution containing a 10% aqueous solution of a liquid higher alkylbenzene sodium sulfonate surfactant in the form of an aqueous solution containing 35% of sodium alkylbenzene sulfonate (Nacconol SL), about 18 parts of a 10% aqueous solution of triethanolamine and 297 parts of water were emulsified by high sheer agitation in an Eppenbach blender model C3. Each emulsion was padded on a 13 part sample of polyethylene terephthalate (Dacron 54) fabric and the padded samples passed through squeeze rollers to express pad liquor in excess of about 65% of the weight of the fabric. Each sample was steamed at 102°, rinsed in water at ambient temperature, scoured at 80° for 5 minutes with 400 parts of an aqueous solution containing 0.8 part of Nacconol SL and 0.8 part of sodium carbonate and again rinsed in water at ambient temperature. Heavy shades of excellent levelness and fastness to light, washing and dry cleaning were obtained on the Dacron samples.

Example 2

The dyeing procedure of Example 1 is repeated substantially as described except that about 29 parts of dye solution and 294 parts of water are charged. The concentration of dye solution in the bath is increased to about 15% by addition of 30.4 parts of trichlorobenzene to the dyeing liquor before emulsification. Excellent level dyes of medium shade strength are obtained from each of the five dye solutions.

Example 3

The following example illustrates package dyeing of Dacron yarn.

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A dye solution prepared by dissolving 12.5 parts of each of the blue color base and violet color base employed in preparing Solution 5 of Example 1 in 475 parts of a mixture containing 49.5% technical trichlorobenzene, 49.5% of β -phenoxyethanol and 1% oleic acid at 90° is cooled to 30° and filtered.

A 36 part portion of the filtrate is diluted with 32 parts of a mixture containing 50% technical trichlorobenzene and 50% β -phenoxyethanol. Water (342 parts) and 68 parts of an aqueous solution containing 10% of the above liquid surfactant (Nacconol SL) is charged and the mixture is agitated as described in Example 1. The homogeneous emulsion obtained is diluted by addition of about 6400 parts of water. A 454 part package of Dacron 54 yarn is dyed with the emulsion in an automatic dyeing machine (Gaston County Machine Co. Laboratory model) at atmospheric pressure. The emulsion is circulated at ambient temperature through the yarn for 5 minutes from the outside of the package to the inside and for five minutes from the inside to the outside. Over a ½ hour period the temperature of the dye bath is raised to 88°. Dyeing is continued at this temperature for 15 minutes during which flow of emulsion through the yarn is alternately from the outside to the inside for 3 minutes and from the inside to the outside for two minutes. The dyed yarn is scoured with about 4000 parts of an aqueous solution containing 8 parts of the above liquid surfactant (Nacconol SL) and 8 parts of sodium carbonate and rinsed substantially as described in Example 1. An excellent reddish-blue level dyeing is obtained.

Example 4

The following example illustrates continuous dyeing of a Dacron-cotton union according to the pad-steam technique.

A. A 187.5 part sample of 65% Dacron 54 and 35% cotton blend is scoured at 82° with an aqueous solution containing 0.0156 part per part by volume of solution of an isooctyl phenyl polyethoxy ethanol containing 9-10 ethoxy units (Triton X-100) and 0.0156 part per part by volume of a solution of sodium carbonate and dried at 121°. A mixture (405.8 parts) of 141 parts of Dye Solution 5 of Example 1, 29 parts of Dye Solution 2 of Example 1, 11 parts of Dye Solution 3 of Example 1, 18.5 parts of aqueous sodium alginate (Keltex) 6.26 parts of triethanolamine and 200 parts of water is emulsified with high sheer agitation over a period of two minutes using an Eppenbach Mixer. The scoured fabric is padded with the emulsion, passed through rollers to express pad liquor in excess of about 65% of the weight of the fabric, steamed at 107° at a residence time of 60 seconds in the steamer and passed through nine wash boxes, the second and third containing the aqueous scouring solution described above, the others containing water at 82°.

The cotton portion of the union is continuously dyed according to conventional pad-steam technique by padding the goods with a dye liquor containing 0.468 part per part by volume of CI Soluble Sulfur Black 1, CI53185, 0.313 part per part by volume of CI Sulfur Blue 9, CI53430, 0.375 part per part by volume of CI Sulfur Blue 7, CI53440 and 0.25 part per part by volume of a liquid polysulfide reducing agent consisting of sodium sulfide and sodium polysulfide in solution (Sodyefide B). The padded fabric is dried in a gas fired oven, padded with an aqueous liquor containing 0.5 part per part by volume of said reducing agent and steamed and rinsed with water at 80°. A deep, level charcoal blue union dyeing which is fast to light, washing, dry cleaning, and crocking is obtained.

B. When the above procedure is repeated employing a conventional Thermosol process to dye the Dacron portion of the fabric with 1668 parts of an aqueous liquor containing 47.75 parts of the color base of a blue disperse

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dye, 5.5 parts of the color base of a red disperse dye and 16.25 parts of the color base of an orange disperse dye, a dyeing inferior in levelness to that obtained in A is produced.

Example 5

The following example illustrates the batch dyeing of a Dacron-wool blend.

A 1655 part sample of fabric containing 910 parts of Dacron 64 and 745 parts of wool is scoured with 33.1 parts of the above liquid surfactant (Nacconol SL). A mixture of 17.7 parts of the blue dye color base employed in Solution 5 of Example 1, 7.1 parts of N-ethyl-N(β -cyanoethyl)-4(4-nitro-2,6-dichlorophenylazo)aniline and 2.4 parts color base as defined in claims 6 and 7 of U.S.P. 2,785,157 is dissolved in 660 parts of a mixture containing 49.5% technical trichlorobenzene, 49.5% of β -phenoxyethanol and 0.99% oleic acid according to the method described in Example 1. The dye solution is emulsified by high sheer agitation in the presence of 66 parts of the above liquid surfactant (Nacconol SL) according to the method described in Example 1 and diluted by addition of 4200 parts of water. The fabric is entered into the bath and agitated at ambient temperature for 10 minutes. An aqueous solution containing 37.2 parts of a 1:2 metallized azo black acid dyestuff in 3000 parts of water is charged to the bath which is heated to boiling at atmospheric pressure over a period of 30 minutes. The bath is held at the boil for 5 minutes and 66.2 parts of 90% aqueous formic acid are charged. The bath and goods are boiled for an additional 25 minutes. The dyed fabric is rinsed with water at ambient temperature and scoured with a 0.2% aqueous solution of said isooctyl phenyl polyester ethanol (Triton X-100). An excellent black union dyeing of the fabric is obtained.

It can be seen that an improved composition and process has been devised for the dyeing of polyester and other synthetic hydrophobic fibers. As will be evident to those skilled in the art, the invention is not limited to the details of the foregoing purely illustrative examples and that changes can be made without departing from the spirit or scope of our invention.

For example in addition to β -phenoxyethanol any aryl glycol ether of the aforementioned general formula can be employed including the following typical examples:

mono-2,4-dichlorophenyl ether of ethylene glycol
mono-4-chlorophenyl ether or ethylene glycol
mono-p-tolyl ether of ethylene glycol
monophenyl ether diethylene glycol
mono-2,4-dichlorophenyl ether of diethylene glycol
mono-4-chlorophenyl ether of 1,2 propylene glycol
mono phenyl ether of bis-1,2 propylene glycol
mono p-tolyl ether of diethylene glycol
a mixture of the monophenyl ethers of ethylene glycol and diethylene glycol.

Any one of the isomers of dichlorobenzene or combination thereof can be employed according to the present invention, i.e. o-, m- and p-dichlorobenzene. Good results were obtained using o-dichlorobenzene containing a small amount of para-isomer which is readily available commercially as Solvent 74.

Similarly any one of the isomeric forms of trichlorobenzenes or any mixture thereof can be employed, for example,

1,2,3-trichlorobenzene
1,2,4-trichlorobenzene
1,3,5-trichlorobenzene

Preferably 1,2,4-trichlorobenzene containing a small amount of 1,2,3-trichlorobenzene is used because of its ready commercial availability.

The free color base of any acetate dyestuff, or mixtures of two or more acetate dyestuff color bases, may be em-

played according to the invention. Typical examples of suitable dyestuffs include:

4-amino-3-nitro-N-phenylbenzene sulfonamide
N-ethyl-N-(β -cyanoethyl)-4-(4-nitro-2-chlorophenylazo) aniline
N-ethyl-N-(β -cyanoethyl)-4-(4-nitro-2,6-dichlorophenylazo) aniline
N,N-bis(β -hydroxyethyl)-4-(2-chloro-4-nitrophenylazo) aniline
1-hydroxy-4-(3'-methylanilino) anthraquinone
Dyestuffs defined by claims 6 and 7 of U.S.P. 2,785,157
Dyestuffs defined by claim 7 of U.S.P. 2,072,252
C.I. Disperse Yellow 3; C.I. 11855
C.I. Disperse Yellow 4; C.I. 12770
C.I. Disperse Red 1; C.I. 11110
C.I. Disperse Red 11; C.I. 62015
C.I. Disperse Red 15; C.I. 60710
C.I. Disperse Red 17; C.I. 11210
C.I. Disperse Green 1; C.I. 56060
C.I. Disperse Violet 13; C.I. 11195
C.I. Disperse Blue 3; C.I. 61505
C.I. Disperse Blue 14; C.I. 61500
C.I. Disperse Black 1; C.I. 11365
C.I. Disperse Black 3; C.I. 11025

In dyeing according to the Solvent Emulsion Technique with the instant solutions any anionic emulsifying agent can be employed. Typical examples of these include:

Triethanolamine oleate
Nacconol SL (the above liquid surfactant)
Tetranol (a 50% by weight aqueous sodium sulfate of a fatty acid ester)
Triton GR-5 (60% by weight aqueous dioctyl sodium sulfosuccinate)

In preparing padding liquors, in addition to the above, high viscosity aqueous sodium alginate such as the 2% aqueous solution of sodium alginate commercially available as "Keltex" can be employed as the emulsifying agent. It will be appreciated that mixtures of the above reagents can be used and that depending on the nature of the fabric being dyed and the mode of dyeing certain emulsifying compositions will be more effective than others. For example, a dye solution emulsified with sodium alginate and triethanolamine oleate affords especially good dyeing of the Dacron portion of a Dacron-cotton blend in continuous dyeing by the pad-steam technique while Nacconol SL is advantageously employed in beck dyeing of 100% Dacron.

When triethanolamine oleate is to be used as the emulsifying agent, oleic acid may, if desired, be incorporated in the dye solution and triethanolamine added to the aqueous bath before emulsification.

Batch dyeing, e.g. beck dyeing or package dyeing, employing the instant novel dye solutions according to Solvent Emulsion technique is generally carried out with about 0.1–0.5% dye based on the weight of the fiber for a light shade, about 0.5–0.75% for a medium shade and about 0.75–2.0% or more for a heavy shade. Advantageously about 10 to 20 parts and especially about 15 parts of dyebath per part by weight of fiber is used and about 0.05 to 2%, especially about 1% by weight dye solution based on the weight of the bath is used. Conveniently the emulsion is prepared by mixing about 2 to 5 parts especially about 3 parts by weight of water with about 1 part by weight dye solution under high shear agitation and diluting the resulting emulsion by addition of water. Advantageously about 5–15% especially about 10% by weight of Nacconol SL based on the weight of dye solution is employed as the emulsifying agent. Preferably the dyeing is carried out for about 5 to 20 minutes, especially about 15 minutes at a temperature of about 85° C. to boiling temperature of the bath at atmospheric pressure, and especially at about 90° C.

Continuous Solvent Emulsion dyeing with the novel dye

solutions of the invention is conveniently carried out by the pad-steam process. Aqueous emulsions of the dye solutions are padded on the fabric which thereafter is passed between squeeze rollers to express pad liquor in excess of about 55–75% especially about 65% by weight of the fabric. The padded fabric is contacted with steam at about 100–110° C. for about 0.5 to 2 minutes especially about 1 minute. Generally the pad liquors are prepared so as to provide about 0.2–0.6% by weight dye on the weight of pad liquor for a light dyeing, about 0.75–1.5%, for a medium shade and about 1.5–4% or more for a dyeing of deep shade. Advantageously the concentration of dye solution in the pad liquor is about 10–40%, especially about 13–16% by weight.

If desired the concentration of the dye solution in the pad liquor can be increased after emulsification by adding aryl glycol ether, polychlorobenzene or mixtures thereof. The amount of emulsifying agent used will vary according to the emulsifying agent employed.

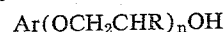
An excellent result is generally obtained using about 0.5–2% especially about 1% by weight of triethanolamine oleate based on the weight of the dye solvent together with about 2.5–10% especially about 5% by weight of "Keltex" based on the weight of pad liquor.

After dyeing by other batch or continuous process the fabric is normally given one or more aqueous rinsings and alkaline scourings e.g. with about 8–10 parts per part by weight of fabric of an aqueous solution containing about 0.25% by weight sodium carbonate and about 0.25% Nacconol SL.

The present invention has numerous advantages over prior art processes as will be obvious to those skilled in the art. Firstly, the present invention employs dyestuffs in forms which are economically and readily prepared and do not require costly manufacturing operations to render them dispersible. Secondly, the novel solutions of the invention dye polyester and other synthetic fibers in heavy shades of outstanding levelness, and fastness to washing, dry cleaning, light and crocking; and thirdly, the present novel solutions provide heavy shades on polyester and certain other synthetic fabrics by a continuous dyeing process using conventional equipment without the use of extreme temperatures or pressures.

We claim:

1. A composition for dyeing a synthetic hydrophobic material which comprises at least one acetate dyestuff; at least one aryl glycol ether having the general formula:



wherein R is a member of the group consisting of hydrogen and methyl, Ar is an aromatic hydrocarbon radical of the benzene series and n is an integer of from 1 to 2; and a polychlorobenzene selected from the group consisting of dichlorobenzene and trichlorobenzene.

2. The composition of claim 1 wherein said acetate dyestuff is substantially in the free color base form.

3. The composition of claim 1 wherein said aryl glycol ether is β -phenoxyethanol.

4. The composition of claim 1 wherein the weight ratio of polychlorobenzene to aryl glycol ether is from about 0.3 to 4 to 1.

5. The process for dyeing a synthetic hydrophobic material which comprises contacting said material with an aqueous emulsion of the composition of claim 1.

6. The process as described in claim 5 wherein said hydrophobic material is a linear polyester fiber.

7. A continuous process for dyeing a linear polyester fiber which comprises padding an aqueous emulsion of the composition defined by claim 1 on said polyester fiber and then contacting said fiber with steam.

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NORMAN G. TORCHIN, Primary Examiner.

DONALD LEVY, Examiner.