United States Patent Office 3,240,713 Patented Mar. 15, 1966

3,240,713

WOOD FLOUR RUG CLEANING COMPOSITION

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No Drawing. Filed Aug. 2, 1962, Ser. No. 214,185
2 Claims. (Cl. 252—139)

This invention relates generally to compositions for cleaning rugs, carpets, upholstery material and other such types of pile fabrics of the kind knitted or woven principally of wool and/or other hydrophobic fibrous yarns, including such synthetic fibers of the polyamide type (e.g., nylon), the acrylic type (e.g. acrylon), the acetate type and the like, and more particularly to compositions containing wood flour or sawdust for gathering soiling constituents to be removed from the pile, this application being a continuation-in-part of my copending application, Serial No. 799,082, filed March 13, 1959, now abandoned.

A primary object of the invention is to produce a wood flour cleaning composition which may be worked into the pile of fabrics and which will not stain the pile of even the lightest colored fabrics because of the presence in the wood of naturally occurring color bodies or of dyes introduced into the wood to artificially color the same to a desired light color or tint.

It is now common to manufacture rugs and carpets with piles of very much lighter color than formerly, and it has become necessary to insure the absence of all staining elements from wood particles and the like used in cleaners for such fabrics. In the past, the presence of tannins, resins and the like in wood flour cleaners for dark rugs, carpets and other pile fabrics was not too critical. But now it is important that such staining constituents be eliminated.

It is, therefore, a primary object of the present invention to provide cleaning composition for pile fabrics of the kind above mentioned from which all naturally occurring staining materials, such as tannins and resins, have been eliminated from the wood flour constituent of the composition, as by destruction or conversion thereof into harmless non-staining substances, so that, upon contact of the composition with light colored pile fabrics, no staining thereof will result.

A further object is to produce a cleaning composition of the character aforesaid which essentially comprises, in combination, solvents to attack and loosen water-soluble and water-insoluble soiling agents and wood flour to absorb and remove from the fabric the released soiling agents, the composition being entirely free of color bodies that might stain or otherwise discolor contemporary light colored pile fabrics.

Another object of the invention is to provide for the householder a wood flour cleaning composition which not only will not stain light colored piles, but also may be applied to the fabrics for cleaning the same without necessitating their removal from the floor or other surfaces covered thereby, thereby reducing to minimum wrinkling, shrinking, mis-shaping, loss of sizing and other undesired results incident to cleansing of the fabric in commercial rug cleaning plants.

An additional object of the invention is to impart to the wood particles of a wood flour cleaning composition of the character aforesaid a permanent hue or tint which is bright and light in color to not only enhance the appearance of the packaged product but also to prevent rendering unsightly the pile of the cleaned rug or carpet should it be that a small quantity of the dry wood flour temporarily remains in the pile after the first sweeping or vacuuming following the operation of cleaning the rug or carpet with the wet wood flour product.

This last-mentioned objective is of particular importance in connection with the cleaning of modern light colored pile fabrics, and to this end a further important

object of the invention is not only to bleach out of the wood flour the naturally occurring tannis, resins and other undesired color bodies which give it a dark hue but also in certain instances to brightly color the wood flour by the use of "direct" dyes which are "substantive" to cellulose and impart to the wood flour a permanent light color or tint which will not transfer to the fibers of the fabric being cleaned. Also, it will be apparent that by so providing the rug cleaning composition with a non-transferable light colored hue or tint, which becomes darkened upon absorption of soil from the fabric being cleaned, the composition itself has the inherent capacity of visually indicating the degree of soil and dirt which is removed from the fabric during the cleaning operation.

Another important objective of the present invention is to provide a composition of the character described which is effective to clean rugs and other pile fabrics not only of oil-soluble and water-soluble soils but also of insoluble soils, the solvent phase of the composition serving to free the oil-soluble soils, the water phase thereof serving to free the water-soluble soils and the wood flour serving to absorb and remove from the fabric pile all of the insoluble soils together with the solubilized soils.

Other objects of the invention and the various features of improvement thereof will become apparent to those skilled in this art upon reference to the following specification, which sets forth certain preferred embodiments of the invention, presently believed to be the best form of practicing the same, and also various modifications of different phases within the scope of the invention and illustrative of possible equivalents in materials, ranges and procedures.

The cleaning composition of the present invention comprises principally a treated wood flour and a blended solvent and water added therewith in appropriate proportions to wet the flour thoroughly (without dripping from a handful), the flour being bleached free of all such naturally occurring color bodies as would be capable of staining or discoloring the fabric being cleaned, and the solvent being a mixture of normally immiscible liquids having the property of causing the wet wood flour, when worked into the pile or nap of the rug, carpet or the like, to collect and remove by absorption the foreign materials in the fabric pile which have soiled the same. This composition is used by spreading it, when wet, upon the dry pile fabric, and then rubbing or scrubbing it into the pile or nap, as with a brush. When the composition has been thoroughly worked into the pile and permitted to remain until the wood flour is approximately dry, the wood particles will have absorbed the soiling substances. The wood flour is now removed from the pile, which may be done by sweeping with a brush or broom, but is more commonly and satisfactorily done by passing a vacuum machine thereover, such as a conventional vacuum cleaner or sweeper.

According to this improvement, the wood flour or sawdust particles are chemically bleached to change the objectionable color characteristics of the color bodies, and such wood particles may be invested, if desired, with a light or bright color tint which is permanent in the wood particles and will not shift to the nap or pile of the fabric being cleaned upon application of the wet product nor shift thereto during any part of the cleaning procedure. The application of such a clear bright tint to the wood particles, which is accomplished by what are known as direct dyes, that is, dyes which are substantive to cellulose or remain permanently combined with the cellulose, is greatly facilitated by the bleaching agents which are included in the composition for destroying or modifying the objectionable color bodies naturally present in the untreated wood flour. These color bodies are principally tannins, resins and the like and are converted or

bleached out by treatment with chemicals which, when combined with the wood flour in the presence of water, release nascent or free oxygen over a period of time to effect the required change.

THE COMPOSITION IN GENERAL

The composition of the present invention preferably includes the following constituents in the proportions by weight as indicated in the following general formula, it being noted that the amounts of the constituents employed may vary within the permissible ranges given depending upon the particular ingredients used and the requirements of a given composition:

	Typical [1]	Permissible Range [1]
Wood flour	25	18 to 35
Solvent Mixture:		
Water	50	25 to 70
Petroleum fraction	12	5 to 40
Chlorinated hydrocarbon	12	5 to 40
Emulsifier	0.85	0.25 to 1.0
Alkaline detergent	0.55	0.25 to 1.0
Oxidizing bleach	0.25	0.20 to 1.0
Dye	0.001	zero to 0.05

[1] All figures are approximate percent.

The water content is increased to make up the small percentage difference. The dye content, when incorporated in the composition, is based on the amount of the wood flour employed and in practice runs from about two to ten grams per 100 pounds of wood flour depending upon the dye and intensity desired, the proportion of dye to wood flour being well under one-tenth of one percent. The oxidizing bleaching agent is between about 0.2% and 1.0% of the whole composition, depending upon the particular wood flour content of the composition. Based on the wood flour with which the bleaching agent is initially blended, the amount of the bleaching agent used generally runs between 0.5% and 3% by weight of the wood flour, depending upon the available active oxygen and also upon the extent of decolorizing required.

The following are specific examples of compositions within the general formula above given:

Example I.—With dye

	Percent by weight of the total composition
Maple wood flour	25
Water	38+
Petroleum fraction	25
Trichloroethylene	10
Sodium lauryl sulfate (emulsifier)	0.5
Trisodium phosphate (detergent)	0.4
Sodium perborate (bleach)	0.4
"Pontamine" red dye	0.01

Example II.—Without dye

Maple wood flour	26
Water	40.5+
Hydrocarbon solvent (naphtha)	20.5
Trichloroethylene	11.2
Coconut diethanolamide (emulsifier)	0.88
Trisodium phosphate (detergent)	0.21
Tetra potassium pyrophosphate (detergent)	0.38
Hydrogen peroxide (bleach)	0.35

Example III.—Without dye

Maple wood flour	25.2
Water	49+
Petroleum fraction (Stoddard solvent)	12
Trichloroethylene	11.8
Isopropylamine dodecylbenzene sulfonate (emulsifier)	0.85
Trisodium phosphate (detergent)	0.20
Tetra potassium pyrophosphate (detergent)	0.36
Sodium perborate (bleach)	0.24

It will be understood, of course, that pursuant to the general formula as first above given, each of the formulae of Examples II and III may contain, if desired, a dye for brightening the wood flour in the amount of from 0.001% to 0.05% by weight of the total composition.

THE WOOD FLOUR

The wood particles employed are in the form known as wood flour or fine wood sawdust which is free from very coarse particles and is also free from appreciable quantities of fine powder which would be difficult to remove from pile fabrics after cleaning. For this purpose, a typical wood flour or sawdust should completely pass a 25 mesh screen but should be retained upon a 110 mesh screen. In fact, even a narrower mesh range is preferable for best consistency and workability such as that passing a 30 or 40 mesh screen but retained on an 85 mesh screen. Sometimes 10 to 25 mesh sawdust might be used.

The best wood chosen for the wood flour or sawdust is maple wood, and for light colored fabrics the lightest wood obtainable (color-wise) is deemed best because it has the smallest amounts of tannis and resins and is, therefore, the least apt to stain and is the most readily bleached and with the smallest amount of bleaching material. The hardest woods, such as maple, birch, white birch and mahogany, contain in general the smallest amounts of coloring bodies. Chestnut sometimes is reasonably satisfactory but contains more color bodies than maple and requires stronger treatment. Oak, although low in resin, is high in tannin, and the same is true of hickory. Pine is high in resins. These woods can sometimes be used for some purposes, as where darker fabrics are to be treated, but, even then, they require more intensive treatment. Therefore, maple has so far been found to be the best for all purposes, because it is best for light colored fabrics and is also best where a light bleach is required in order to obtain the brightest color tints through dyeing of the wood flour.

THE SOLVENT

The solvent mixture or liquid phase of the composition, which ordinarily makes up around 75% of the composition, contains not only water in an amount sufficient to attack and dissolve or to loosen the water-soluble constituents of the soil in the pile of the fabric to be cleaned but also water-immiscible solvents for oily, tarry and similar water-insoluble soil constituents in the fabric. In general, the water content of the composition is somewhat greater than the water-immiscible solvents content thereof. Thus, water may comprise about 25% to 70% by weight of the composition, while the other liquids, consisting principally of the hydrocarbons, may comprise from 10% to 40% of the composition by weight. In practice, the hydrocarbon content of the composition includes a petroleum fraction (i.e., naphtha, "mineral spirits," Stoddard solvent or the like) in the amount of from 5% to 40% and a chlorinated hydrocarbon in an amount ranging upwardly from 5% of the total weight of the composition. While the chlorinated hydrocarbon has some additional solvent advantage for certain soiling constituents, it is primarily used to raise the flash point of the volatile hydrocarbon solvents and thus act as a fire retardant. Such chlorinated liquids have boiling

points between about 150° F. and 300° F. In cases where fire hazard is of no consideration, the chlorinated solvent portion of the composition could be omitted entirely and the petroleum fraction used in its stead.

A most desirable petroleum fraction which is now available is a practically odorless insoparaffinic hydrocarbon obtained as heavy ends from the manufacture of alkylated gasoline. Both Stoddard solvent and "mineral spirits" have each been used in the same proportion as the petroleum fraction or hydrocarbon solvent of the foregoing formulae with equal facility and results. There are on the market many solvents known as mineral spirits and paint thinners which are usable, and this would extend to most of the readily volatile petroleum fractions whose boiling points may run between about 300° F. and 400° F., or even over a somewhat wider range. Such fractions are well known as solvents, cleaners, cleaning solvents, thinners and the like. These liquid solvents are well known as low boiling petroleum fractions or hydrocarbons.

The chlorinated hydrocarbon deemed most preferable is trichloroethylene because of its fire retarding effectiveness, low toxicity, generally more acceptable odor, higher evaporation rate and other desirable characteristics. But others which can be used satisfactorily are carbon tetrachloride, 1,1,1-trichloroethane, tetrachloroethylene and kindred well known chloro-hydrocarbons.

It has been found that when the proportion of water to the petroleum fraction in the composition is maintained at a ratio of at least 4 to 1, the fire hazard involved in use of the composition is very materially reduced, this for the reason that such ratio of water to petroleum fraction (naphtha, Stoddard solvent or mineral spirits), serves to dilute and so render virtually non-ignitable the vapors emanating from the volatile solvents. The chlorinated hydrocarbon above mentioned, such as trichloroethylene of Example III, serves additionally to reduce the flammability of the petroleum fraction, particularly when the amounts of chlorohydrocarbon and petroleum fraction are present in the composition in approximately equal amounts as in said Example III.

THE EMULSIFIER AND DETERGENT SALTS

In addition to the water and hydrocarbon solvents mentioned, it is necessary to employ an emulsifier and wetting or surface active agent and also to employ a detergent salt. The emulsifier effects a fine state of dispersion of the water and immiscible hydrocarbons with such intimate and complete emulsification of the liquid phase of the composition as to provide an homogenous mixture thereof, and for this purpose almost any of the well known "surfactants" or surface active agents (of which there are a great many) may be used. These include anionic wetting agents, such as the alkyl aryl sulfonate type represented by dodecylbenzene isopropylamine sulfonate and the triethanol amine salt of lauryl ether sulfate, and the sulfated alcohol type represented by sodium lauryl sulfate; non-ionic wetting agents such as alkylolamide condensation products of diethanolamine and a higher fatty acid represented by the diethanolamide of coconut oil fatty acids and similar fatty acids and the ethoxylated alkyl phenols, such as isooctylphenyl polyethoxy ethanol containing for example an average of 9 moles of ethylene oxide, as well as various alkyl aryl polyether alcohols, fatty esters of glycerol and glycol and other polyhydric alcohols and condensation products of ethylene oxide with fatty acids. Long lists of these surfactants have been published and are available in the printed literature.

Beside acting as emulsifying and wetting agents, these surfactants serve also as detergents, along with the alkaline detergent salts here described, whereby to improve the cleaning properties of the product.

The proportion of emulsifier used is not particularly critical. While the amount of emulsifier generally used is around 0.5% of the composition total weight, the proportion may vary from about 0.25% to 1.0% or even to as much as 2.0%.

Because an alkaline detergent assists in imparting adequate cleansing properties to the final product and also serves to neutralize the natural free acidity of the wood flour, such salt is preferably included in the composition of the present invention. Detergency-increasing alkaline salts usable for the purpose include the various alkaline phosphates and polyphosphates, as well as sodium carbonate, sodium silicate and the like. The phosphates are preferred, such as trisodium phosphate, tetrasodium pyrophosphate and tetrapotassium pyrophosphate, and mixtures of these. Because this product is often used on wool fabrics, excessive alkalinity is to be avoided and should not rise appreciably above the neutral point or pH 7, the preferred pH being between 5.5 and 7. Depending upon various factors, such as the acidity of the wood flour, the amount ordinarily used will run about 0.5% to 0.7%, with an overall permissible range of between about 0.25% and 1%; but this range again could be a little wider according to acid conditions. While either trisodium phosphate or tetrasodium pyrophosphate may be used alone, it is preferred generally to combine them as in the foregoing Examples II and III.

THE BLEACHING AGENT

As has been outlined above, it is required that the tanins, resins and other objectional color bodies in the various sawdusts used, which would either stain light colored pile fabrics or tend to produce dullness or loss of brilliancy when seeking to effect light tints in dyeing, must be eliminated by chemically treating such wood particles to convert or bleach out such color bodies. This has been satisfactorily accomplished by the use of those chemical compounds which liberate free or nascent oxygen during the preparation of the composition.

The most satisfactory such bleaching agent has been found to be sodium perborate which, in the presence of water, releases about 10% of its weight as active oxygen in the form of H_2O_2. It is therefore represented as $NaBO_2 \cdot H_2O_2 \cdot 3H_2O$. Also usable is sodium borate perhydrate which actually is sodium perborate with less water, and which releases about 15.5% active oxygen and acts as does sodium perborate. Other alkaline salts which release active oxygen also may be used such as sodium pyrophosphate peroxide, containing about 9% active oxygen, sodium carbonate peroxide containing 14% active oxygen, and others which yield hydrogen peroxide in addition to water, such as ammonium, sodium and potassium mono-persulfate. Sodium peroxide is usable but is deemed hazardous. Even hydrogen peroxide itself may be used, although it is not ordinarily convenient to handle.

Where the sodium pyrophosphate peroxide is used, it will replace in corresponding amount the alkaline detergent herein mentioned, upon release of its hydrogen peroxide in the presence of water, thus yielding tetrasodium pyrophosphate. The same result obtains with use of sodium carbonate peroxide. All the indicated salts, which are alkaline salts, release hydrogen peroxide slowly so that the required bleaching takes place not only during the mixing and packaging operations but continues for some time after the packages have been closed or sealed.

The amount of bleaching salt employed is preferably about 1% of the weight of the wood flour in the composition, the amount varying depeding upon the kind of wood flour that is used. Thus, if considerable bleaching is required, the bleaching salt may be as much as 3% of the weight of the wood flour. Based upon the total composition, which contains approximately 25% wood flour, the amount of bleaching salt may range from 0.25% to 1.0% by weight of the total composition.

THE DYES

In addition to bleaching out the staining color bodies of the wood flour in order to protect light colored fabrics, another important aspect of the present invention is, as previously indicated, to impart to the bleached wood particles, when dyed, bright permanent color tints or pastel shades whereby to eliminate any naturally occuring dark color of the wood flour and so lighten the color characteristics of the prepared composition as applied to the pile of a rug or other fabrics. This feature is of aesthetic and practical importance, especially when not all of the cleaning composition is completely removed immediately following cleaning and may not be entirely removed until subsequently again treated with a vacuum processor sweeping.

This wood flour coloring process is a dyeing operation wherein a dye of desired color is used which is selected from the class of dyes well known in the trade and in the technical books as "direct dyes" or dyes "substantive to cellulose." These dyes are transferred entirely to or "exhaust" themselves completely on cellulose surfaces, including the wood particles here, without the use of mordants, and will not then transfer to other surfaces, whence the term "substantive" (see Encyclopedia of Chemical Technology, vol. 5 (1950), page 280).

These dyes are water soluble and are introduced in extremely small proportion into the solvent, such amount being less than 0.1% based on the wood flour, or within a range normally of about 0.005% to 0.025% depending upon the intensity (in the order of 2 to 10 grams per 100 pounds) of wood flour. Based on the entire composition, this proportion may vary from about 0.001% to as much as 0.05%, depending upon the desired shade or intensity.

Individual dyes, which are well known upon the market by individual names and their dye index numbers, include "Pontamine" red, indicated in the above Example I, as a suitable dye to obtain a bright pink, and many others.

Direct or substantive dyes for cellulose are available in a considerable number of colors to meet all requirements and are plentiful. They are known on the market as such. Their structural formulas and chemical names in general are quite involved, and they are therefore set up under the well known "Color Index" with its thousands of numbers.

The very satisfactory dye above mentioned as "Pontamine" red and used here to produce a desired bright pink is, for example, listed as Direct Red 81, C.I. No. 28160 (i.e., Color Index Number 28160). It is produced by E. I. du Pont de Nemours & Company of Wilmington, Delaware, being also cataloged by them as "Pontamine" Fast Red 8BLX.

Du Pont also markets other direct dyes under their trademark "Pontamine," some of which are:

Fast Pink BL, listed as Direct Red 75, C.I. No. 25380;
Fast Blue 4GL, listed as Direct Blue 78, C.I. No. 34200;
Fast Orange 2GL, listed as Direct Orange 59.

National Aniline Division of Allied Chemical & Dye Corporation markets a number of direct or substantive dyes under their "Solantine" trademark, some of which are:

Yellow FF Conc., listed as Direct Yellow 28, C.I. No. 19555;
Yellow SGL, listed as Direct Yellow 44, C.I. No. 29000;
Turquoise G, listed as Direct Blue 86, C.I. No. 74180;
Red 8BLN, listed as Direct Red 80, C.I. No. 35780;
Fast Scarlet 4BA, listed as Direct Red 24, C.I. No. 29185;

is also marketed by National Aniline under their "Erie" trademark.

The above list is indicative of the many regularly classified direct dyes, i.e. dyes substantive to cellulose, that are available for the various color requirements. Proportions required may vary with the dye, and will of course vary with the intensity required, whether from demand or personal preferences. Structural formulas of "C.I." dyes are available from the "Color Index."

METHOD OF PRODUCTION

In the manufacture of the product of the present invention, the required amount of water for a given amount of wood flour (in accordance with the formulae above given) is introduced into a tank, and the alkaline detergent salt selected is then added to the water and dissolved therein, as with the aid of agitation. There is then further added to the water the indicated proportion of emulsifier selected and all of the petroleum hydrocarbon solvent (petroleum fraction) to be used in the composition, together with all of the chlorinated hydrocarbon solvent if such is to be used to afford the indicated fire protection desired. The particular order of addition of the emulsifier and immiscible solvents does not appear to be important, but during their addition the solution should be agitated with a high-speed agitator, whereby to form a fine dispersion or emulsion. If a dye is to be used, as is required according to one phase of this invention (e.g., Example I, above), it will have been dissolved in a small proportion of the water and this solution then added to the emulsion and thoroughly distributed throughout the emulsion by agitation.

Meanwhile, the dry wood flour will have been introduced into a blender or mixing vessel equipped with appropriate paddles or mixing blades in such arrangement that an adequate tumbling or other mixing operation will result. The bleaching agent, of which sodium perborate is preferred, is now added to the wood flour in the form of a dry powder, and the paddling or stirring operation is continued for a time to insure thorough uniform distribution of the bleaching powder throughout the wood flour.

Mixing of the bleaching powder having been completed, the above described solvent emulsion is next admixed with the wood flour gradually, as by spraying the emulsion into the blender or mixing vessel during operation of the paddle or other stirring means until all of the emulsion is introduced into and uniformly distributed throughout the wood flour batch. With a batch of a few hundred pounds total, this is easily accomplished within a time of ten or fifteen minutes. The result is a homogeneous mass entirely free from any spotty dyeing effects. The mixed mass is now gradually fed out to packaging means which feeds it into jars or other suitable containers as desired.

THE BLEACHING AND DYEING PHASE

The dye appears to be taken up rapidly by the surface of the wood particles as the dye in solution contacts them. The liberation of active oxygen to convert or bleach the color bodies in the wood particles commences when the water in the solvent comes into contact with the bleaching salt to form hydrogen peroxide, as above described. Oxygen liberation continues during the mixing operation and also during the packaging operation. Thus, it may be said that bleaching commences promptly upon contace of water with the wood particles and the bleaching material, such wetting of the wood particles being assured by the presence of the emulsifying and wetting agent or surfactant. With the slow liberation of active oxygen from the bleaching salt used, quick loss of oxygen is avoided, and the oxidizing bleach continues even after sealing of the jars or other containers commonly employed. Thus, bleaching is not necessarily completed in the 15 or 20 minutes of manufacturing and packaging time, but may continue for hours after sealing and even for several days after sealing. However, there is no significant or objectionable pressure development following sealing of the jars. As bleaching continues, the brilliance of the dye improves, which is a desired and

important aesthetic phase of the treatment and aspect of the invention. Such bleaching apparently does not significantly attack the dyes but rather supplements and improves the dyeing action.

Thus, with a very limited amount of a red direct dye, as above outlined, a very bright clear pastel shade of pink is attained, especially with maple wood flour. Light shades of other pleasing colors are similarly obtained, but less bleaching is required for a pleasing shade of dark green than for bright pastel shades of pink or yellow, for example, or even very light blue or very light green as distinguished from dark shades of such colors.

It is to be appreciated that, in addition to preparing the wood particles for the reception of very light color tints, the bleaching is quite essential to the conversion or destruction of those color bodies which are very soluble in water, especially in the presence of a surface active agent or alkaline detergent, and which could then readily stain light colored fabrics contacted by the wet wood flour or the water extract itself by imparting objectionable brown or yellow shades to the fabric pile if the color bodies remained.

The bleaching treatment pursuant to the present invention thus positively destroys or converts the tannins and other color bodies of the wood flour. If it be that natural resins in the wood would otherwise act as coloring or staining agents for light colored pile, then these resins also are converted or rendered harmless. Inasmuch as even the preferred maple woods may vary somewhat in their contents of tannins and other color bodies because of their different sources, it is possible for the present process neverthless to effect substantially uniform bleaching. Thus, where such contents are the highest encountered, the higher percentages in the indicated range of oxidizing bleach may be used to insure adequate and through bleaching. This process is thereby very simply adaptable to the particular wood being treated, and even to a given composition for any particular use to which the product is to be applied

A very significant advantage of the present bleached and/or bleached and dyed product is that, owing to its very light color and very light dye tints, the dirtier the pile of a rug happens to be, the more the color of the bleached flour will turn toward a yellowish gray or gray as the cleaning operation proceeds, thereby indicating to the housewife or other operator how well the cleaning operation is proceeding.

It may be explained that in the composition of the present invention, it has been found that best results are obtained when the water content and the hydrocarbon solvent content of the composition are so related or proportioned as to provide in effect what appears to be an outer phase of relatively free solvent and an inner phase of relatively free water surrounding each wood flour particle, in consequence of which the hydrocarbon solvent is immediately effective upon the application of the composition to the fabric being cleaned to act upon and dissolve the oil-soluble soils in the fabric, the free water of the inner phase being subsequently effective to act upon and dissolve the water-soluble soils. These solubilized soils together with any insoluble soils present in the fabric are then finally absorbed by the wood flour and so removed from the fabric. The action as just described is believed to be due to the fact that since the wood flour has a greater affinity for water than for the hydrocarbon solvent, it largely absorbs the water rather than the solvent to leave the latter in its outer phase relation free to immediately act upon and dissolve the more difficulty removable oil-soluble soils.

It is to be appreciated that the product of this invention is susceptible to many variations within its scope and to many other uses such as the cleaning of other pile-bearing or nap-bearing fabrics than rugs, upholstery fabrics, various irregularly surfaced fabrics, furs, and similar materials. In the cleaning of such materials, and the subsequent removal of the spent composition by vacuum or otherwise, the disappearance of the color of the composition from the fabric surface is evidence to the user of the successful removal of the wood flour and the soil from the fabric.

What is claimed as new and useful is:

1. A non-staining cleaning composition for rugs and other pile fabrics consisting essentially of the following ingredients in substantially the proportions stated by weight of the total composition: wood flour—18 to 35 percent; an oxidizing bleaching agent selected from the group consisting of sodium perborate, hydrogen peroxide and ammonium, potassium and sodium persulfate to bleach the wood flour in situ and render it free of naturally occurring color bodies which might stain the fabric being cleaned—0.20 to 1.0 percent; water—25 to 70 percent; volatile low boiling solvent selected from the group consisting of naphtha, mineral spirits, Stoddard solvent, trichloroethylene, carbon tetrachloride, 1,1,1-trichloro ethane and tetra chloro ethylene and mixtures thereof—10 to 40 percent; an organic emulsifier surfactant selected from the group consisting of non-ionic and non-soap anionic organic synthetic detergents—0.25 to 1.0 percent; and an alkaline detergent salt selected from the group consisting of trisodium phosphate, tetra sodium pyrophosphate and tetra potassium pyrophosphate and mixtures thereof—0.25 to 1.0 percent.

2. A non-staining cleaning composition as defined in claim **1** which includes a cellulose dye substantive to wood flour in the amount of from 0.001 to 0.05 percent of the total composition by weight for imparting a bright dye tint to the wood flour.

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