

1

3,382,058

DISPOSABLE SCOURING PAD

Louis Maxwell Wise, Union, N.J., and Joseph Richard Anghinetti, Kennebunkport, Maine, assignors to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing, Filed July 24, 1964, Ser. No. 385,079

1 Claim. (Cl. 51—295)

ABSTRACT OF THE DISCLOSURE

Disposable scouring pad having an adhesive abrasive composition adhered to a flexible, porous base such as paper, the abrasive being a particulate synthetic resin of a Barcol hardness of at least 33 and a particle size from about 20 to 200 mesh, where the paper substrate may be impregnated with a detergent, and a porous pad may be adhesively secured to the substrate on the side opposite the abrasive composition.

This invention relates to the novel use of particular resinous compounds as abrasives and their use as a component in manufacturing a disposable scouring pad. The abrasive and the scouring pad each are designed for use for cleansing, abrasive and polishing needs. They are particularly of value in uses such as smoothing wood and paint, the scouring and cleaning of pots, pans and other utensils and equipment in the kitchen, and the cleaning of porcelain bathroom equipment and such.

In order to have the required abrasive characteristics necessary for the scouring pad to give desired results, the abrasives utilized in prior art scouring pads included non-metallic materials such as aluminum oxide, emery, silicon carbide, silica, pumice stone, and the like, and metals of various hardness. The most frequent abrasive pads are steel, bronze, copper, or glass mesh scouring pads. Each of these various abrasives carries the basic problem of scarring and scratching the substrate.

Other problems, which are just as important to the consumer, included the abusive effect upon the hands of the user. The fact that abrasives of this coarse and hard nature (1) tend to readily separate from the backing, especially during strenuous use, and (2) tend to combine with the grease and char to produce filth unsuitable for prolonged future use, complicate the problem of obtaining a commercially acceptable pad. Also, the abrasive which is worked loose over a period of time tends to clog the drains of sinks. Where steel mesh is utilized, after limited use, rust complicates the picture.

To counter some of these problems, some manufacturers incorporate rust inhibitors, and to generally improve the cleansing efficiency, the manufacturers frequently incorporate soap or a detergent of some sort. Where the scouring pad consists of abrasive particles bonded to a backing with a binder, too weak a binder further complicates the problem, mentioned above, of the coarse abrasives separating from the backing. To give some degree of protection to the hands of the user, protection against all the harsh ingredients referred to above, various manufacturers have developed assorted devices such as handles and the like.

As the problems discussed above become more complicated, and more complex means are employed to overcome the problems, the cost continues to rise. Manufacturers attempted to offset increased cost by modifying the structures so that the scouring pad would be longer lasting for the consumer.

It is an object of this invention to overcome the above problems by eliminating the need for the harsh abrasives discussed above, with their accompanying problems.

Another object is to produce a scouring pad where the

2

danger of the abrasive becoming embedded in the hands of the user, is overcome.

Another object of this invention is to provide an efficient scouring abrasive which does not detrimentally scar nor mar the substrate which is being cleaned.

Another object is to produce an efficient scouring pad which is of sufficiently low cost that after a single use, the consumer may discard the scouring pad without suffering substantial economic loss.

Other objects become apparent from the above and following disclosure.

As discussed above, the prior art had always found it necessary to use a harsh abrasive of either non-metallic or metallic materials, such as steel, bronze, copper, or glass mesh, in order to have the required abrasive characteristics for scouring pots, pans, etc. In scouring pad combinations, resinous materials were sometimes used as binders for attaching the abrasive composition to a backing substrate. As contrasted to the foregoing abrasive materials conventionally used, the resinous compounds were considered by the ordinary artisan, to have little or no abrasive action, especially in the scouring art, the scouring art being complicated by the many problems as discussed above. Further evidence that resinous compounds were considered by the prior art to be essentially non-abrasive is found in the field of dentistry, which has utilized such resinous compounds as mild cleaning agents. For purposes of a dental cleaning agent, the substance should remove the tightly adherent pellicle film with a minimum of abrasion of the underlying tooth material, which includes the soft dentin which may be exposed by receding gums. Thus, the ideal cleaning agent in dentistry is one which effects the maximum removal of pellicle film with the minimum abrasion of dentin. Prior to applicants' invention, it would have been illogical to suspect that a cleansing agent sufficiently mild as to be used for the above dental purposes, would also be effective to remove charred and tough materials such as are associated with used cooking utensils, for example.

As contrasted to the accepted conventional view in the art, as to these resinous compounds, it has now been unexpectedly found that the resinous materials of this invention are preferred and superior scouring agents.

This invention relates more particularly to the use as an abrasive of resinous materials for scouring purposes.

The abrasive compositions herein described may be used, not only as abrasives for scouring pads, but may be incorporated into scouring powders, grinding compounds and many other uses where abrasives are normally used.

The key to this invention is an abrasive powder with high efficiency in removing soil, but with less tendency to scratch the substrate than have the usual abrasives such as silica.

When the abrasive is used in a scouring pad combination, the abrasive particles may be bound to a face of a substrate such as paper, using a binder such as resin.

When detergent is used as a part of a scouring pad combination, a saturating substrate such as the paper referred to above, is utilized as the backing, whereby the detergent leaches out of the substrate face which is opposite from the face to which the abrasive is bound.

In a scouring pad more suitable for prolonged use, a backing of material such as polyurethane or dacron wadding may be attached to the substrate such as the paper-backing referred to above, to thereby produce a double-backing. The backing is attached to the substrate's face which is opposite to the face to which the abrasive is bound. Any stable binder may be used to attach the backing.

When a double-backing is used, as referred to above, an additional combination may include a detergent

3

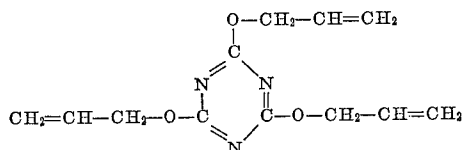
conveniently incorporated substantially homogeneously throughout the binder used to bind the backing to the substrate face as described above.

In the double-backing combination using a backing for the substrate and using a detergent in the binder as described above, not all binders give desired results, because the binding-action of the binder is broken as the detergent leaches out. A preferred binder formulation has been discovered, whereby the binding-action is not broken by the leaching out of the detergent. The detergent must leach through the backing, thereby prolonging the effective life of the detergent in the scouring pad.

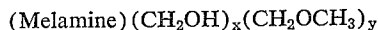
It is to be understood, however, that where a double-backing as described above, and a detergent are both utilized in the scouring pad combination, the detergent may be incorporated into a saturating paper as described above for the (single-substrate) paper-backed combination.

Preferred and superior results are obtained with (1) a polyester of the type which is cross-linked with an allyl monomer, and (2) an aminoplast compound bis(methoxymethyl)methylol melamine.

The preferred allyl monomer is triallylcyanurate which is reacted with maleic anhydride and ethylene glycol. The triallylcyanurate is of the structural formula:



The bis(methoxymethyl)methylol melamine is a reaction product of the characteristic formula:

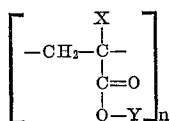


where $x+y=3$ to 5, $y=1.5$ to 4.5 and $x \geq 0$.

Other resins suitable for purposes of this invention include: (unless otherwise specified, "n" represents a number which means that the unit "recurs" sufficiently to impart polymeric-resinous characteristics).

(a) Polyesters typified by:

[1] acrylic resins of the generic structural formula:

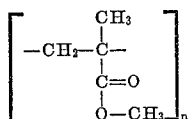


where X is: [a] —H; or [b] —CH₃.

Where Y is:

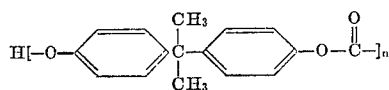
[a] —CH₃; or [b] —C₂H₅; or [c] C₄H₉; or [d] combination of these types

and where a typical example is polymethyl methacrylate of the generic structural formula:



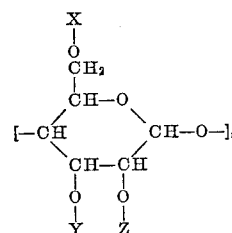
[2] allyl and allyl-modified resins, such as diallyl phthalate, and the preferred triallylcyanurate discussed above,

[3] polycarbonate resins of the generic structural formula:

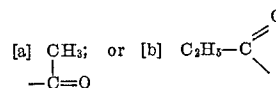


4

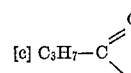
[4] cellulosic resins of the generic structure formula:



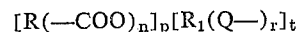
wherein X, Y and Z are:



or

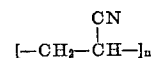


where:

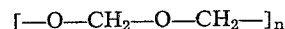


n, p, r and t are each greater than one, and $n+r$ is greater than three.

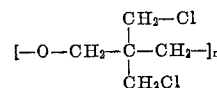
[6] polyacrylonitrile resins of the generic structural formula:



(b) Acetal resins, of the generic formula:

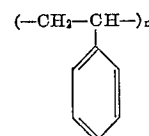


(c) Chlorinated polyether resins of the generic structural formula:

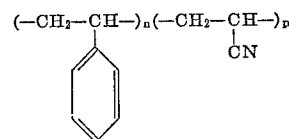


(d) Styrene resins, such as:

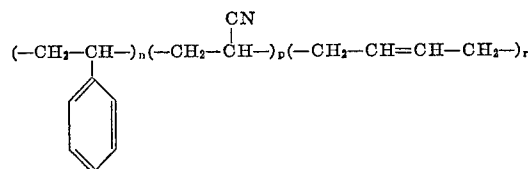
[1] styrene polymers, of the generic structural formula:



[2] styrene-acrylonitrile copolymers, of the generic structural formula:



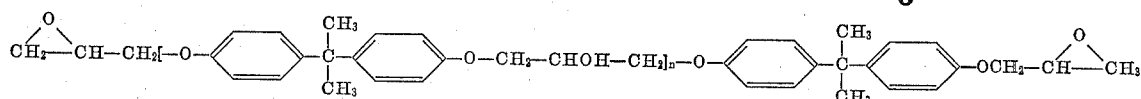
[3] styrene, butadiene, acrylonitrile copolymers of the generic structural formula:



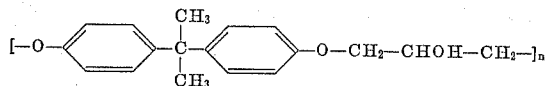
(e) Epoxy resins, of the generic structural formula:

5

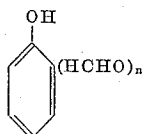
6



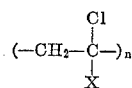
(f) Phenoxy resins, of the generic structural formula:



(g) Phenolic resins, such as phenol-formaldehyde, of the generic structural formula:

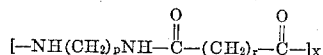
where n is at least 1.5.

(h) Vinyl polymer and copolymer resins, of the generic structural formula:



where X is H or Cl, and

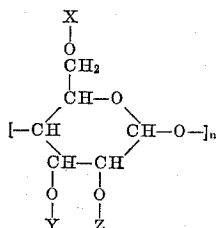
(i) Polyamide resin, of the generic formula:



where:

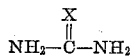
 p and r each equals 2 to 10, and
 X equals 20 to 1500.

(j) Cellulosic resins, of the generic structural formula:

where X, Y and Z are: [a] -H; or [b] C_2H_5 -; or [c] mixtures thereof.

The aminoplast compounds of this invention include compounds such as melamine-formaldehyde resin or melamine-glyoxal resin, urea-formaldehyde resin or urea-glyoxal resin, protein resins such as casein-formaldehyde resin, and the methylol and alkylated methylol resin derivatives of:

(a) Urea analogues of the generic formula:



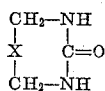
where X is:

O (urea), or
S (thiourea), or
=NH (guanidine).

(b) Ethylene urea:



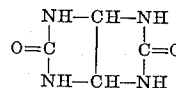
(c) modified ureas:



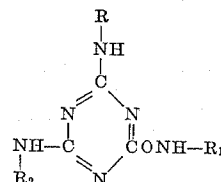
where X is:

[1] CH_2 (trimethylene urea), or[2] R-N (tetrahydrotriazinones),
where R=alkyl.

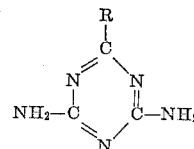
(d) Acetylenediurea:



(e) Melamine and substituted melamines:

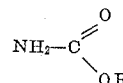
where R, R_1 and R_2 are H or alkyl.

(f) Guanamines:

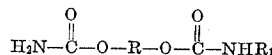


where R is H, alkyl, or substituted alkyl.

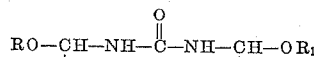
(g) [1] Mono- and [2] di-carbamates:



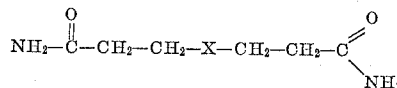
where R is alkyl, and

where R is alkylene and R_1 is H or alkyl.

(h) 4,5-dihydroxyimidazolidinone and its ethers:

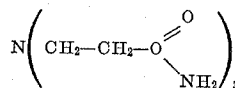
where R and R_1 are H or alkyl,

(i) Bispropionamides:

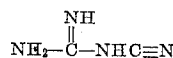


where X is O, S or NH.

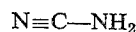
(j) Nitrilotrispropionamide:



(k) Dicyanamide:



(l) Cyanamide:



A limiting factor in the choice of any resinous abrasive for purposes of this invention, is the requirement that the resinous abrasive be of at least 33 Barcol hardness.

A preferred embodiment of this invention is the incorporation of the above abrasive (Barcol hardness of at least 33) into a scouring pad, the abrasive being attached by a binder to the substrate. In the manufacturing of a disposable scouring pad, the abrasive treatment in applying the particulate abrasive to the substrate such as paper,

may be applied by various means such as (1) during the paper manufacture, or (2) by dipping, (3) coating, (4) spraying, etc. Also, as noted above, a backing material such as polyurethane or Dacron wadding may be bound to the substrate, to form a double-backing. When this abrasive is utilized with one or more of particular binders and a particular substrate, a scouring pad combination of unexpected superior efficiency results, when using solids of about 5% to about 30% of abrasive and about 30% to about 40% of binder, the percentages being based on total weight prior to application to the substrate.

For the permeable-plastic double-backing embodiment described above, the detergent percentage is flexible, depending upon (1) the particular backing used, (2) the location of the detergent, i.e., in the paper or alternatively in the adhesive binding the backing to the paper. (3) the intended use and intended longevity of the scouring pad, etc. However, the preferred detergent range is about 19% solids and the detergent may additionally include about 2.5% to about 50% of an organic or inorganic acid such as citric acid and monosodium phosphate, the percentages being based on the total weight of the composition before its application to the double-backing substrates. For the paper-substrate embodiment without a double backing, the detergent solids preferably is about 6.7%, and may additionally include about 3.3% of an inorganic or an organic acid such as citric acid and monosodium phosphate, the percentages being based on the total weight used of the composition before application to the saturating paper.

For the paper backed pad, we prefer a ratio of detergent to monosodium phosphate of 2:1. This is applied at the rate of about 0.06 lbs. of solids/sq. yd. of paper.

For the double backed pad, the adhesive-detergent mixture is applied at the rate of about 0.915 lbs. of formulation/sq. yd.

The abrasive resin of this invention is effective as a scouring composition only within a critical particle size range of about 20 to about 200 mesh. The upper limit of particle size is dictated (1) by manufacturing considerations, and (2) to avoid excessive scratching, rather than determinants related to effectiveness as a scouring agent. The preferred range is from about 40 to about 140 mesh. The optimum particle sizes within these ranges also vary, depending upon the substrate to be scoured, and upon the form when used, such as when attached to a flexible backing.

The adhesive used in the scouring pad combination to attach the particles to a flexible substrate, should preferably be elastic, flexible, and resistant to deterioration by hot water, soap, detergents, acids, etc. However, with these practical considerations in mind, any conventional glue or adhesive may be used, such as rubber cement, or pyroxylin. Gum arabic, gum tragacanth, gum congo, gum karaya, gum kauri, gum sanadrac, and soybean gum, are sensitive to water and are suitable only for dry scouring conditions. It is within the scope of the invention to use conventional resinous adhesive formulations known to the ordinary artisan.

The unexpectedly superior results are obtained by the use of emulsions of polyvinyl acetate, or thermoplastic acrylic polymers and copolymers, or mixtures thereof. These preferred adhesives are illustrated in Examples 2 and 9.

Another particularly desirable adhesive is a butadiene acrylonitrile copolymer blended with a phenol aldehyde resinous condensation product in the proportion of about 70 parts of the said copolymer to 30 parts of the phenolic resin dissolved in a suitable solvent.

The detergent used in a scouring pad combination of this invention may be anionic or cationic or nonionic, and may include any one or more conventional detergents, such as sodium or amine dodecylbenzene sulfonates, sulfated fatty esters, sodium alkyl naphthalene sulfonates, sodium dodecyl diphenyl ether disulfonate, ethylene ox-

ide condensates of fatty alcohols, ethylene oxide condensates of alkyl phenols, ethylene oxide condensates of alkyl amines, fatty esters of polyhydroxyalcohols, fatty alkanolamides, and fatty glyoxalidines.

The detergent-binder composition which gives unexpectedly superior results when in a scouring pad combination which uses the plastic backing referred to above, is made from an emulsion containing about a total of 37% solids. The solids of the emulsion include substantial reactant percentages of polyethylacrylate, methacrylate, and methylol acrylamide. The detergent-binder composition contains about 60 parts of the emulsion, about 27 parts of sodium dodecylbenzene sulfonate, about 13 parts of monosodium phosphate, about 1.6 parts of coconut fatty acid—ethanolamine condensate, about 10 parts of glycerine and about 30 parts of water.

Any conventional method known in the art may be utilized in preparing the abrasive of this invention. However, there are preferred methods illustrated in Examples 1 and 8, which give superior results in the preparation of the two preferred and superior abrasives of this invention such as:

(1) A polyester of the type which is cross-linked with an allyl monomer (triallylcyanurate), and

(2) Bis(methoxymethyl)methylol melamine.

In order to illustrate this invention, Examples 1 through 8 illustrate the preparation of two preferred resins, the tests conducted to demonstrate their abrasive and scouring efficiency, and the results thereof. Examples 9 and 10 respectively, illustrate single- and double-backed pads, respectively. These examples do not limit the scope of this invention, but are solely for illustrative purposes.

Example 1 illustrates the preparation of the preferred polymerized polyester resin for use as a scouring abrasive.

Example 2 illustrates preparation of abrasive-detergent paper using the polyester resin of Example 1.

Example 3 illustrates the application of an acidified detergent to the back of the treated paper prepared in Example 2.

Example 4 illustrates the preparation of the resin dye panels to be used in the scouring tests of Examples 5 and 9, testing the abrasive papers of Example 2, Example 3, and Example 9.

Example 5 illustrates the *scouring* test and results for the abrasive treated paper of Examples 2 and 3.

Example 6 illustrates an abrasive test, of the preferred polyester resin, to determine the abrasive action on stainless steel.

Example 7 using the preferred polyester resin, illustrates (1) scouring efficiency and (2) abrasive efficiency, on a charred aluminum skillet.

Example 1.—Preparation of polymerized polyester resin

To 100 grams of the preferred triallylcyanurate cross-linked polyester resin in the form of an aqueous syrup (of about 80% resin solids) was added 1.0% benzoyl peroxide. This was heated to 60° C. for about 15 minutes to dissolve the benzoyl peroxide. The resultant product was poured into a stainless steel pan to a layer about 1/8" thick and then cured at 105° C. for an hour. After cooling, the resultant solid was broken into small parts and micro-milled to obtain particles of from 40 to 200 mesh. The resin syrup includes a reaction product of maleic anhydride, ethylene glycol, and triallylcyanurate.

Thus, Example 1 illustrates the method used to prepare the preferred resin for testing.

Example 2.—Preparation of abrasive paper using polyester resin application of resin-binder composition

Five parts of polyester resin micro-milled as shown for coating No. 1, in Example 1, was mixed with 20 parts of 55% solids emulsion of polyvinylacetate copolymer. A film of 10 mil. thickness of this mixture was knife coated on one side of a 0.025 inch thickness, white, saturating paper. The thus treated paper was then dried for 10 minutes at 225° F.

Thus, Example 2 illustrates the use of the micro-milled resin of Example 1 in preparing abrasive paper to be tested by the resin dye panels of Example 4 in tests Examples 5, 6, and 7.

Example 3.—Application of acidified detergent (single, paper-backed)

The opposite side of the above treated paper (of Example 2) was sprayed with 8 parts of an aqueous solution containing 10% alkylaryl sulfonate and 0.5% monosodium phosphate. (However, about 6.7% of alkylaryl sulfonate and about 3.3% of monosodium phosphate is preferred.) The treated paper was then dried for 10 minutes at 225° F.

Thus, Example 3 illustrates treatment of the Example 2 paper, treating the back side with an acidified detergent. This paper is for use in tests of Examples 5, 6 and 7.

Example 4.—Method of preparing resin dye panels used in abrasion tests

There are two separate coatings.

I. Coating 1.—Into a ball mill was entered 358.5 parts of a petroleum distillate solvent. To this was added 801 parts of calcium carbonate-titania, 204 parts of rutile type titania, 255 parts powdered clay, 85.5 parts diatomaceous earth, 3.45 parts aluminum stearate and 564 parts alkyl resin containing phthalic anhydride and soya type oil. Small steel balls weighing 3000 grams were added to the mixture to assist in milling. The mixture was milled for two days and then 2.7 parts of 6% cobalt naphthenate and 8.25 parts of 24% lead naphthenate were added. The milling was then continued for an additional 30 minutes.

A portion of the above mixture was knife coated onto an aluminum panel, imparting a 0.0015 inch thickness film. The panel was then air dried for 30 minutes followed by a subsequent heat treatment at 350° F. for 10 minutes in a circulating hot air oven.

II. Coating 2.—A resin-dye solution was prepared wherein 0.5 parts of (1) an anthraquinone type oil blue dye was dissolved, (2) in 240 parts of a petroleum distillate solvent and 83 parts of this solution was mixed (3) with 400 parts of a 65% solution of polymerized terpene resin in petroleum solvent.

A 0.0015 inch thickness film of this resin-dye composition (type II coating) was applied over the previous coating (type I coating), air dried for 30 minutes, followed by a subsequent drying at 350° F. for 10 minutes.

Thus, Example 4 illustrates the preparation of resin dye panels to be used to test scouring efficiency in Examples 5 and 9.

Example 5

A portion of the treated paper of Example 2 was attached to the abrasion boat of a Gardner Washability Machine and permitted to abrade an aluminum panel coated as in Example 4, employing 50 strokes during which time the panel was kept wet with distilled water. The panel was then compared for scouring efficiency (the degree of removal of the substrate's coating material) with a series of arbitrary standards in which zero is poor and a rating of 6 is excellent.

The scouring efficiency of this trial was rated 5 (very good).

Thus, Example 5 illustrates the scouring test and interpretation of results, for the treated abrasive paper of Examples 2 and 3, when tested on the resin dye panels of Example 4.

Example 6.—Test for surface damage to stainless steel

The procedure of preparation of Example 5 is followed with the exception that the panel abraded was uncoated stainless steel. The panel after 50 strokes was compared for scratches with a series of arbitrary standards in which zero is excellent (showing no scratches) and 5 is poor (showing a badly scratched surface).

The scratch rating with the abrasion paper of Example 2 was zero, showing no scratches.

Thus, Example 6 illustrates the abrasion test and interpretation of results, for the treated abrasive paper of Examples 2 and 3, when tested on an uncoated stainless steel substrate.

Example 7.—Practical scouring test

In this experiment the abrasive paper treated as Example 2 was used as follows:

Ordinary margarine was placed in an uncoated aluminum skillet and heated until it burned, leaving the skillet in a dirty brown and caked condition. The skillet was then scoured wet with a portion of the paper treated as in Examples 2 and 3.

Results in the skillet show (1) scouring efficiency was good, and (2) essentially no damage to the aluminum surface, the abrasion scratch rating was good.

Thus, Example 7 illustrates the use of a margarine-burned aluminum substrate to test scouring efficiency and abrasion scratch rating for the treated abrasive paper of Examples 2 and 3.

Example 8.—Preparation of polymerized aminoplast resin

To 100 grams of bis(methoxymethyl)-methylol melamine resin aqueous syrup (of about 80% resin solids) was added with stirring 10 ml. of 37% hydrochloric acid. (This exotherms to about 40° C.) The resultant product was poured into a stainless steel pan and let stand two days at room temperature at which time a solid material was formed. The resultant material was broken into small parts and micromilled to obtained particles of from 40 to 200 mesh.

Thus, Example 8 illustrates the preparation of the preferred, polymerized aminoplast resin, bis(methoxymethyl)-methylol melamine.

Example 9

This example illustrates a single, paper-backed pad.

An aqueous mixture containing 1 part of the pulverized aminoplast resin of Example 8, and 4 parts of a 55% polyvinylacetate copolymer emulsion was applied to one side of white wet strength absorbent paper by knife coating, thereby imparting to the paper a 10 mil film of the mixture. The coated paper was dried for 10 minutes at 225° F. The back of the paper was then saturated with a solution containing 10% sodium alkylaryl sulfonate and 0.5% monosodium phosphate followed by drying as previously mentioned. (However, about 6.7% of sodium alkylaryl sulfonate and about 3.3% of monosodium phosphate is preferred.)

Samples of this paper were evaluated for scouring and abrasion efficiency as described in Examples 5 and 6.

Under the standard method of evaluation as aforementioned the ratings were as follows:

Test:	Rate
Scouring (cleaning) -----	6=excellent
Abrasion (scratching) -----	0=excellent

Thus, Example 9 illustrates the scouring test and results, and the abrasive scratch test and rating, when using the abrasive resin preparation of Example 8, using substrates as prepared in Examples 5 and 6.

Example 10

This example illustrates the preparation and use of applicant's preferred double-backed scouring pad.

A scouring pad was prepared by the procedure of Example 9, using the preferred 6.7:3.3 ratio of sodium alkylaryl sulfonate; monosodium phosphate and using paper which had been treated with a wet-strength resin.

The following materials were mixed together:

	Parts
Emulsion of thermoplastic acrylic copolymer (31% solids) -----	70
Coconut fatty acid—ethanolamine condensate -----	1.6
Glycerol -----	7.5
Sodium dodecylbenzene sulfonate -----	20
Monosodium phosphate -----	10
Water -----	33

This formulation was applied to the back of the paper by means of a coating knife at the rate of 0.92 lbs. of formulation/sq. yd. A sheet of polyurethane foam $\frac{3}{8}$ " thick was placed over the coating, pressed down firmly and dried for 8 min. at 275° F.

This pad was used for scouring small pans. Between uses it was rinsed and permitted to dry. On each use, it generated copious foam and the polyurethane foam showed only slight tendency to separate from the rest of the pad.

Although the invention has been described in detail with reference to certain preferred embodiments, thereof, it will be understood that variations and modifications can be effected within the spirit and scope of the invention as described above and as defined in the appended claim. It is, for example, within the scope of this invention to add any of various conventional perfumes, disinfectants, coloring and bleaching agents, etc. to the abrasive or to the combinations disclosed.

What is claimed is:

1. A scouring pad combination comprising a wet strength paper substrate having applied to one side a thin layer of a scouring composition comprising in parts by

weight (1) about 5 parts of a particulate synthetic resin having a Barcol hardness of at least 33 and a particle size of about 20 to 200 mesh, said resin being selected from the group consisting of triallylcyanurate polyester resin and bis(methoxymethyl)-methylol melamine resin, and (2) about 20 parts of a polyvinyl acetate polymer emulsion having 55% solids, said substrate having applied to its other side a layer of a detergent binder composition comprising (1) about 70 parts of an emulsion of a thermoplastic acrylic copolymer containing 31% solids, comprising polyethylacrylate, methylacrylate and methylolacrylamide, (2) about 1.6 parts of a coconut fatty acid-ethanol amine condensate, (3) about 7.5 parts of glycerol, (4) about 20 parts of sodium dodecylbenzene sulfonate, (5) about 10 parts of monosodium phosphate, and (6) about 33 parts water; said detergent binder composition layer having a pad of polyurethane foam secured thereto.

References Cited

UNITED STATES PATENTS

2,665,528	1/1954	Sternfield et al. -----	51—295
3,014,795	12/1961	Schmidlin -----	51—298
3,050,414	8/1962	Reilly -----	51—296
3,116,574	1/1964	Ciesielski -----	51—295
3,251,800	5/1966	Cooley et al. -----	51—296
3,261,675	7/1966	Cameron -----	51—295
3,266,878	8/1966	Timmer et al. -----	51—298

ALEXANDER H. BRODMERKEL, *Primary Examiner*.
DONALD J. ARNOLD, *Examiner*.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,382,058

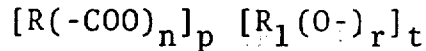
May 7, 1968

Louis Maxwell Wise et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 25, beginning with "where:" cancel all to and including "three." in line 28, and insert instead the following:

or [d] -NO_2 ; or [e] mixtures of these;
where examples of the cellulosics are
cellulose acetate, and cellulose acetate
butyrate,
[5] alkyd resins which are condensation
products of polyfunctional acids and
alcohols, and which are of the generic
structural formula:



where n, p, r and t are each greater
than one and,
where $n + r$ is greater than three.

Signed and sealed this 11th day of November 1969.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents