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[54] **SCOURING CLEANSER COMPOSITION**

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[58] **Field of Search** 252/99, 95, 89

[56] **References Cited**

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[57] **ABSTRACT**

Colored particles containing an inorganic bromide compound as a bleach activator, for incorporation into a cleaning composition such as a scouring cleanser, and a scouring cleanser composition containing such colored particles. A method for making such particles is also disclosed.

12 Claims, No Drawings

SCOURING CLEANSER COMPOSITION

This is a continuation of application Ser. No. 109,608 filed Jan. 25, 1971.

The present invention relates in general to cleansing compositions and in particular to the provision of small colored particles which may be incorporated into cleansing compositions, such colored particles having esthetic as well as functional value.

Consumer acceptance of cleansing compositions is often dependent on esthetic appeal of the composition. The importance of the physical appearance of such compositions is widely recognized in the soaps, detergents and related industries.

For example, it is known that, as regards cleansing compositions, certain colors, the blues, greens and whites, have great visual appeal for the public. These colors, or combinations thereof, are associated with the attainment or existence of a hygenic condition, as opposed to the yellows, browns and related colors, which are somewhat repugnant to the sensitivity of the user in the particular environment of a cleansing composition.

Further, for a dry, powdered product, the greatest esthetic appeal seems to result from a composition that is colored with a combination of white and a blue or green color. That is, the particular cleasning product should contain some particles that are blue or green colored, and some particles, preferably the majority, that are white.

The methods for making such vari-colored cleansers heretofore have not been entirely satisfactory. Thus, most of these methods were difficult and expensive, and resulted in products having marginal advantages.

In accordance with the discovery which is the basis of the present invention, vari-colored cleansing compositions may be formulated by a method that is simple and inexpensive.

Therefore, it is a primary object of the present invention to provide a colored, solid particle having functionality and esthetic appeal, which particle may be incorporated into a cleansing composition.

A further object is the provision of a scouring cleanser composition containing such colored particles.

Another object is to provide a process for producing such colored particles in a simple and inexpensive manner.

The present invention therefor offers the following advantages. The product exhibits equal or better performance to existing products, and in addition has the benefit of esthetic appeal. The process of manufacture is simple and inexpensive, and existing plant equipment can be used. Further, the process can be used to produce colored solid particles for a variety of products.

Other objects and advantages of the present invention will become more apparent hereinafter as the description proceeds.

The attainment of the foregoing and related objects and advantages is made possible in accordance with the present invention which, in the broader aspects, includes the provision of a functional colored particle containing as essential ingredients (1) a bleach activator, (2) a pigment extender and binder, (3) a pigment and (4) a rapidly water soluble inert particulate carrier material.

The bleach activator is preferably an inorganic bromide compound, such as an alkali metal bromide that is substantially neutral and that is soluble in water. Examples of preferred compounds for use herein are sodium bromide, lithium bromide and potassium bromide.

A single component of the composition may serve as pigment extender and binder. Such material may be, for example, propylene glycol, polyethylene glycol 300, propylene glycol phenol ether, or other suitable material. This material must be compatible with the pigment and other components of the colored particle, and must also be soluble in or miscible with water.

The pigments contemplated for use herein, although encompassing a relatively broad class of materials, must nonetheless meet certain requirements. The pigments best suited for use display substantial water dispersibility. Pigments classes as non-water dispersible form precipitates when added to aqueous media and accordingly would be unsuitable for use herein. A further requirement with regard to pigment selection relates to color composition; thus, suitable pigments should have a reflectance in the 450 to 535 millimicron wave length region of the visible spectrum. This region corresponds to the blue through green colors. In addition, the pigment material must be stable in the presence of hypohalide-liberating agents.

Thus, the pigment may be selected from animal pigments, mineral pigments, synthetic or artificial pigments, so long as the pigment material is not in any way detrimental to the function of the composition into which it is to be incorporated. The phthalo cyanine pigments, such as chromophthal green, are particularly suitable for use.

The carrier material or diluent for use in the invention is a rapidly water soluble, particulate material which is substantially neutral and inert with respect to the other materials used in the cleansing composition. Such material may be for example, sodium chloride, potassium chloride or sodium sulfate.

The pigment, bleach activator and binder are essentially coated onto the outside of the particles of the carrier material. The colored solid particles prepared according to the invention thus have a particle size of about 0.15 mm to 2.0 mm. The preferred diameter size is about 1.5 mm.

The method of preparation of the colored particles, according to the invention, is as follows.

The carrier or diluent material and the bleach activator are dry blended; the pigment is added and dry mixed with the carrier and bleach activator mixture. Following this, the binder and pigment extender is added to the mixture and blended. The entire mixture must be blended for a period of time sufficient to assure uniform coating of the particles or conglomerates.

The following examples serve to illustrate the compositions of the invention, and the method of making them, according to the invention. The examples are in no way limiting thereto.

EXAMPLE I

A colored particle was prepared having the following composition:

Sodium chloride	71.85	parts by weight
Sodium bromide	25.93	do.
Chromophthal green		

-Continued

100% G. F. Toner	0.44	do.
Propylene glycol	1.78	do.

The sodium chloride and sodium bromide were dry blended, and the pigment was added to the salt mixture with dry mixing. The propylene glycol was then added to the composition, and mixing was continued for 15 minutes until all the particles were uniformly coated. The product consisted of small green colored particles suitable for use in a cleanser.

EXAMPLES II AND III

Example I was repeated, except that lithium bromide and potassium bromide, respectively, were used instead of sodium bromide.

In a further aspect of this invention, the colored particles as formulated herein are added to a cleansing composition, such as a scouring cleanser. A scouring cleanser as provided by the present invention, contains as essential ingredients (1) an abrasive material, (2) a hypohalide liberating agent, which acts as a bleach, and (3) a water soluble detergent.

The abrasive material may be chosen from a fairly wide range of materials, provided certain criteria are met. The abrasive material should be substantially white colored, and should have a high light reflectance value, such as about 80–85 percent measured at 550 μ. The abrasive material should have a particle size of about .001 mm to 0.4 mm, and should be free of any acid, since this will have deleterious effects on any perfume that may optionally be included in the cleaner.

Examples of abrasive materials that may be used in the cleaning composition are silica (silicon dioxide), feldspar, pumice, volcanic ash, diatomaceous earth, talc, calcium carbonate, bentonite, or mixtures of these, or one of the commercially available silica compositions, such as "Silex," which is a ground alpha grade of sand, available from The Pennsylvania Pulverizing Company.

The abrasive material is employed in proportions of up to 95 and preferably 45 to 95 percent of the cleanser composition.

The hypohalide liberating bleaching agent to be included in the cleanser formulation is one which is capable of liberating hypochlorite chlorine and/or hypobromite bromine upon contact with aqueous media. Such bleaching agents are, for example, heterocyclic N-bromo and N-chloro imides such as trichlorocyanuric acid, tribromocyanuric acid, dibromo and dichlorocyanuric acid, and salts thereof with water solubilizing cations such as potassium and sodium.

Other suitable bleaching agents are N-brominated and N-chlorinated succinimid melonimid phthalimide and naphthalimide, the hydantoins, such as 1,3-dibromo and 1,3-dichloro-5, 5-dimethylhydantoin; N-monochloro-C, C-dimethylhydantoin methylene-bis (N-bromo-C, C-dimethyl-hydantoin); 1,3-dibromo and 1,3-dichloro-5-isobutyhydantoin; 1,3-bromo and 1,3-dichloro 5-methyl-5-ethylhydantoin; 1,3-dibromo and 1,3-dichloro 5,5-diisobutylhydantoin; 1,3-dibromo and 1,3-dichloro-5-methyl-5-n-amylhydantoin, and the like. Other useful hypohalite-liberating agents comprise tribromomelamine and trichloromelamine. Dry, particulate, water soluble anhydrous inorganic salts are likewise suitable for use such as lithium hypochlorite and hypobromite. The hypohalite-liberating agent may, if desired, be provided in the form of a stable, solid complex or hydrate, such as sodium p-toluene sulfobromamine-trihydrate, sodium benzene-sulfoschloamine-dihydrate, calcium hypobromite tetrahydrate calcium hypochlorite tetrahydrate, etc. Brominated and chlorinated trisodium phosphate formed by the reaction of the corresponding sodium hypohalite solution with trisodium phosphate (and water as necessary) likewise comprise efficactious materials. The present invention contemplates as an additional embodiment the use of bleaching agents capable of liberating hypochlorite as well as hypobromite such as, for example, the N-brominated, N'-chlorinated heterocyclic imides, as for example the N-bromo, N'chlorocyanuric acids and salts thereof, e.g., N-monobromo-N, N-dichlorocyanuric acid, N-monobromo-N-monochlorocyanuric acid, N-monobromo-N-monochlorocyanuric acid, sodium-N-monobromo-monochlorocyanurate, potassium-N-monobromo-N-monochlorocyanurate; and the N-brominated, N-chlorinated hydantoins, e.g., N-bromo-N-chloro-5, 5-dimethylhydantoin and N-bromo-N-chloro-5-ethyl-5-methyl hydantoin.

The hypohalide-liberating compound is employed in an amount of from 0.1 to 25 percent by weight of the composition, and preferably in an amount of from about 0.3 to 20 percent by weight thereof.

The detergent component of the compositions described herein comprises water soluble organic detergent materials which are stable in the presence of the contemplated hypohalite-liberating compound. These organic detergents may be of the anionic, cationic, amphoteric or non-ionic types provided of course that they are compatible with the compositions as a whole and in the proportions employed. In those instances, wherein the detergent is a liquid under normal conditions, as is the case with the non-ionic agents generally, they may be provided in particulate solid form after absorption upon diatomaceous earth or other similar agents according to procedures well known in the art.

Thus, suitable anionic surface active agents include those surface active or detergent compounds which contain an organic hydrophobic group and an anionic solubilizing group. Typical examples of anionic solubilizing groups are sulfonate, sulfate, carboxylate, phosphonate and phosphate.

Examples of anionic detergents which may be used in the compositions of the invention are the soaps, such as the sodium soaps of tallow, grease, coconut oil, tall oil and mixtures thereof; and the sulfated and sulfonated synthetic detergents, particularly those having about 8 to 26, and preferably about 12 to 22, carbon atoms to the molecule.

As examples of suitable synthetic anionic detergents there may be cited the higher alkyl mononuclear aromatic sulfonates such as the higher alkyl benzene sulfonates containing from 10 to 16 carbon atoms in the alkyl group in a straight or branched chain, e.g., the sodium salts of decyl, undecyl, dodecyl, (lauryl), tridecyl, tetradecyl, pentadecyl, or hexdecyl benzene sulfonate and the higher alkyl toluene, xylene and phenol sulfonates; alkyl naphthalene sulfonate, ammonium diamyl naphthalene sulfonate, and sodium dinonyl naphthalene sulfonate.

Other anionic detergents are the olefin sulfonates, including long chain alkeno sulfonates, long chain hy-

droxy-alkane sulfonates or mixtures of alkenesulfonates and hydroxy-alkane sulfonates.

Examples of sulfates of higher alcohols are sodium lauryl sulfate and sodium tallow alcohol sulfate. Turkey Red Oil or other sulfated oils, or sulfates of mono or digly-cerides of fatty acids (e.g. stearic monoglyceride monosulfate), alkyl poly (ethenoxy) ether sulfates such as the sulfates of the condensation products of ethylene oxide and lauryl alcohol (usually having 1 to 5 ethenoxy groups per molecule); lauryl or other higher alkyl glyceryl ether sulfonates; aromatic poly (ethenoxy) ether sulfates such as the sulfates of the condensation products of ethylene oxide and nonyl phenol (usually having 1 to 20 oxyethylene groups per molecule preferably 2–12) may be used.

The suitable anionic detergents include also the acyl sarcosinates (e.g. sodium lauroylsarcosinate) the acyl esters (e.g. oleic acid ester(of isothionates, and the acyl N-methyl taurides (e.g. potassium N-methyl lauroyl-or oleyl tauride).

The most highly preferred water soluble anionic detergent compounds are the ammonium and substituted ammonium (such as mono, di and triethanolamine), alkali metal (such as calcium and magnesium) salts of the higher alkyl benzene sulfonates, olefin sulfonates, the higher alkyl sulfates, and the higher fatty acid monoglyceride sulfates. The particular salt will be suitably selected depending upon the particular formulation and the proportions therein.

Nonionic surface active agents include those surface active or detergent compounds which contain an organic hydrophobic group and a hydrophilic group which is a reaction product of a solubilizing group such as carboxylate, hydroxyl, amido or amino with ethylene oxide or with the polyhydration product thereof, polyethylene glycol.

Examples of nonionic surface active agents which may be used are the condensation products of alkyl phenols with ethylene oxide, e.g., the reaction product of isooctyl phenol with about 6 to 30 ethylene oxide units; condensation products of higher fatty alcohols such as tridecyl alcohol with ethylene oxide; ethylene oxide addends or monoesters of hexahydric alcohols and inner ethers thereof such as sorbitan monolaurate, sorbitol monooleate and mannitan monopalmitate, and the condensation products of polypropylene glycol with ethylene oxide.

Cationic surface active agents may also be employed. Such agents are those surface active detergent compounds which contain an organic hydrophobic group and a cationic solubilizing group, such as the diamines such as those of the type $RNHC_2H_4NH_2$ wherein R is an alkyl group of about 12 to 22 carbon atoms such as N-2-aminoethyl stearyl amine and N-2-amino-ethyl myristyl amine; amido-linked amines such as those of the type $R^1CONHC_2H_4NH_2$ wherein R′ is an alkyl group of about 9 to 20 carbon atoms, such as N-2-amino ethyl-stearyl amide and N-amino ethyl myristyl amide; quaternary ammonium compounds such as ethyl-dimethyl-stearyl ammonium chloride, benzyl-dimethyl-stearyl ammonium chloride, benzyl-dimethyl-stearyl ammonium chloride, trimethyl stearyl ammonium chloride, trimethylcetyl ammonium bromide, dimethyl ethyl dilauryl ammonium chloride, dimethyl-propyl-myristyl ammonium chloride, and the corresponding methosulfates and acetates.

Examples of specific amphoteric detergents which may be used are N-alkyl-beta-aminopropionic acid; N-alkyl-beta-iminodipropionic acid, and N-alkyl, N,N-dimethyl glycine.

The substituted aminopropionic and iminodipropionic acids in the sodium or other salt forms; fatty imidazolines such as those made by reacting a long chain fatty acid (e.g. of 10 to 20 carbon atoms) with diethylene triamine and monohalocarboxylic acids having 2 to 6 carbon atoms, e.g. 1-coco-5-hydroxyethyl-5-carboxymethylimidazoline; betaines containing a sulfonic group instead of the carboxylic group; betaines in which the long chain substituent is joined to the carboxylic group without an intervening nitrogen atom, e.g. inner salts of 2-trimethylamino fatty acids such as 2-trimethylaminolauric acid, and compounds of any of the previously mentioned types but in which the nitrogen atom is replaced by phosphorous are further examples.

The detergent material is employed in concentrations ranging from about 0.5 to 30 parts by weight of the total composition with a range of 1 to 7 parts being particularly preferred.

The detergent may be added to the composition by spraying. As especially suitable detergent for use in the invention is "Detax" which is a mixture of alkyl aryl sulfonates prepared by the Colgate-Palmolive Company.

The cleanser compositions may contain various other materials as well, such as builder salts and perfumes. Some of the builder salts that may be included are trisodium phosphate, sodium acid pyrophosphate, sodium carbonate, tetrasodium pyrophosphate, sodium tripholyphosphate, sodium sulfate, sodium silicates, SiO_2/Na_2O of 1/1 to 3.2/1, sodium dibasic phosphate, sodium hexametaphosphate, sodium monobasic phosphate, Borax, etc.

The builder salt is employed in amounts ranging up to about 95 percent, i.e., 0–95 percent by weight with a range of from about 3 to about 30 percent by weight of the composition being preferred.

The following examples illustrate the use of the colored particles prepared according to this invention, in a scouring cleanser.

EXAMPLE IV

A scouring cleanser was prepared of the following composition (percentages are by weight):

Silica	86.7%
Sodium Dodecyl Benzene Sulfonate (60% active)	6.1%
Trisodium Phosphate	4.0%
Trichlorocyanuric Acid	0.5%

To this composition, 2.7 percent by weight based on the total cleanser composition, of the colored particles prepared as in Example I were added. The resulting cleansing compound, which has a white powder containing small green particles, was found to be very effective in cleaning solid surfaces such as enamel and porcelain.

EXAMPLE V

The following scouring cleansers were prepared for testing (percentages by weight):

INGREDIENTS	A	B	C
Silica	86.7%	89.4%	88.7%
Sodium Bromide	0.0%	0.0%	0.7%
Colored Particles (prepared as in Example 1)	2.7%	0.0%	0.0%
Sodium Dodecyl Benzene Sulfonate (60% active)	6.1%	6.1%	6.1%
Trisodium Phosphate	4.0%	4.0%	4.0%
Trichlorocyanuric Acid	0.5%	0.5%	0.5%

Cleanser composition A, containing the colored particles of the invention, was more effective in cleaning than cleanser B, which did not contain a bleach activator. The cleanser A also had a cleaning ability equal to or better than cleanser C, which contained sodium bromide bleach activator dispersed throughout the composition while in cleanser A it was only in the particles.

The colored particles have esthetic appeal, as pointed out above, and are comparable in performance to a bleach activator that is mixed in and distributed throughout a cleanser composition.

What is claimed is:

1. A colored solid particle consisting essentially of water soluble carrier particles selected from the group consisting of sodium chloride, potassium chloride and sodium sulfate, said carrier particles having coated thereon a mixture consisting essentially of a water soluble alkali metal bromide salt, a water dispersible pigment stable in the presence of hypohalide-liberating bleaching agents and a colorant extender selected from the group consisting of propylene glycol, polyethylene glycol 300 and propylene glycol phenol ether.

2. A colored solid particle as in claim **1** wherein the bleach activator bromide salt is a member selected from the group consisting of sodium bromide, lithium bromide and potassium bromide.

3. A colored solid particle as in claim **1** wherein the colorant extender is propylene glycol.

4. A colored solid particle as in claim **1** wherein the pigment has a reflectance value in the 450 to 535 millimicron wave length region of the visible spectrum.

5. A colored solid particle as in claim **1**, having a diameter of 0.15 mm to 2.0 mm.

6. A colored solid particle as claimed in claim **1** further containing at least one member selected from the group consisting of sodium carbonate, tri-sodium phosphate, borax and tripolyphosphate.

7. A scouring cleanser consisting essentially of the particles of claim **1**, from 45 to 95 percent by weight of a substantially white colored abrasive selected from the group consisting of silica, feldspar, pumice, volcanic ash, diatomaceous earth, talc, calcium carbonate and bentonite, said abrasive having a higher light reflectance value of at least about 80 percent measured at about 550 mm, and a particle size of about 0.001 mm to 0.4 mm, from about 0.5 to 30 parts by weight of the composition of a water soluble detergent selected from the group consisting of anionic, cationic, amphoteric, and nonionic detergents stable in the presence of a hypohalide-liberating bleaching agent and compatible with the remaining ingredients of the scouring composition, from 0.1 to 25 percent by weight of a hypohalide bleaching agent capable of liberating hypochlorite chlorine and/or hypobromite bromine upon contact with aqueous media and from 0 to 95 percent by weight of a builder salt selected from the group consisting of trisodium phosphate, sodium acid pyrophosphate, sodium carbonate, tetra sodium pyrophosphate, sodium tripolyphosphate, sodium sulfate, sodium silicate, sodium dibasic phosphate, sodium hexametaphosphate, sodium monobasic phosphate and borax.

8. A scouring cleanser according to claim **7** wherein the detergent is sodium dodecyl benzene sulfonate, the abrasive is silica, the alkali metal bromide is sodium bromide and the hypohalide bleaching agent is trichloro cyanuric acid.

9. A scouring cleanser according to claim **7** wherein the builder salt is trisodium phosphate.

10. A composition according to claim **7** wherein said abrasive is silica.

11. A process for preparing the colored solid particle of claim **1** consisting essentially of the steps of;

a. dry blending a water soluble particulate carrier selected from the group consisting of sodium chloride, potassium chloride and sodium sulfate with a water soluble alkali metal bromide salt;

b. adding to a) a water dispersible phthalocyanine pigment stable in the presence of a hypohalide-liberating bleaching agent;

c. adding a colorant extender selected from the group consisting of propylene glycol, polyethylene glycol 300 and propylene glycol phenol ether to the mixture of step b); and

d. mixing the product of step c) for about 15 minutes.

12. The process of claim **11** wherein the bromide salt is sodium bromide, the phthalocyanine pigment is chromophthal green, the carrier is sodium chloride and the colorant extender is propylene glycol.

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