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SPRAY DRIED DETERGENT CONCENTRATE

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The present invention relates to a composition which consists essentially of a major proportion of an alkali metal higher alkyl benzene sulfonate and minor proportions of an alkali metal higher fatty acid soap and alkali metal silicate effective to form a detergent concentrate which is particularly suitable for commercial laundry operations, as hereinafter described and claimed.

In a typical commercial laundry operation, the washing procedure which is employed is a unique combination of steps which includes a break or first suds operation which removes most of the soil from the goods, followed by one or more additional suds operations wherein added chemicals are used to remove soil left in the goods after the break operation, a bleaching operation for white goods, multiple rinsing steps to remove residual cleaning agent and alkali, followed by souring wherein an acid material is used to neutralize residual alkali absorbed in the goods, and a bluing operation.

The detergent which has been employed in widespread commercial practice is soap, particularly sodium soap of tallow fatty acids, to which alkaline builder salts are added as desired. From time to time, synthetic detergent compositions have been proposed for use in commercial laundering practice, including the use of synthetic detergents free from alkaline builders and synthetic detergents containing a substantial amount of alkaline builder salts such as a sodium polyphosphate. Such compositions have not achieved any significant acceptance in the commercial laundering field. Such synthetic detergent compositions have been found to be inadequate compared to the use of soap for many reasons including relatively high cost, undesirable type of sudsing, undesirable removal of machine lubricants, relatively poor detergency, particularly at high temperature, and insufficient adaptability to varying types of soil load, equipment and processing conditions of the individual commercial laundry. Thus, soap continues to be largely employed in commercial laundering. There are disadvantages normally associated with the use of soap also such as lime soap deposition, darkening of fabrics upon ironing, poor rinsing characteristics, etc.

The present invention relates to a detergent concentrate which is particularly suitable in commercial laundering operations and designed to replace soap products and which consists essentially of a major proportion of an alkali metal higher alkyl benzene sulfonate detergent, a minor proportion of alkali metal soap of higher fatty acids having a high titer, such as about 36° to 57° C., the sulfonate to soap ratio being usually from about 95:5 to 70:30 by weight, a minor proportion of sodium silicate having a sodium oxide to silica ratio of about 1:2 to 1:3.5 by weight, e.g., about 5 to 20% by weight of said alkyl benzene sulfonate, and a minor amount of alkali metal carboxymethylcellulose, said amounts being by weight of solids. A preferred embodiment relates to a spray-dried concentrate in particulate form comprising 55 to 80% of the sulfonate, about 12 to 16% of said silicate sufficient to enable the satisfactory spray-drying of an aqueous medium of said detergent and other organic solids including said soap, carboxymethylcellulose and stilbene fluorescent dye. The concentrate is employed with many advantages in commercial laundry procedure, particularly in combination with a proportionate amount of a sodium orthosilicate for the laundering of heavily soiled

goods. Various other distinctive features of the present invention will be apparent from the following description.

This detergent concentrate is a specially formulated high-active ingredient product which is adaptable for simple and direct replacement of both neutral and built soaps in the commercial laundry. It furnishes high detergent power without excessive foam, lubricates the equipment suitably, inhibits soil redeposition and improves soil suspension, provides effective brightening action, good performance with hard and soft water and scum prevention. Thus, it overcomes the many disadvantages normally associated with the use of soap. The preferred product contains spray-dried beads having relatively low density, usually within the range of 0.12 to 0.4 gm./cc., preferably 0.2 to 0.35 gm./cc., which is free from undesirable dust. It dissolves rapidly in the wash water, provides good initial foam, and is readily removed during the rinsing cycles.

With regard to the ingredients in the concentrate, the alkali metal higher alkyl benzene sulfonate detergent usually has about 9 to 15 carbon atoms in the alkyl group. The alkyl group may be branched such as dodecyl and pentadecyl groups including mixtures thereof which are derived from polymers of lower mono-olefins. The alkyl group may be straight-chained such as the n-decyl, keryl and dodecyl groups.

It is a particular embodiment of the present invention to employ the tridecyl benzene sulfonate. This material is a mixture of propylene polymers such as propylene tetramer and propylene pentamer which averages to an alkyl group of about 13 carbon atoms. In the commercial laundry operations, products containing this material are particularly superior to otherwise similar formulations containing the dodecyl benzene or pentadecyl benzene sulfonates. The concentrate containing the tridecyl benzene sulfonate has a greater sustained cleaning power, and enhanced wetting, foaming and dirt-suspending ability. Such products have increased foam and a more stable foam compared to the use of other alkyl benzene sulfonate detergents in usual use concentrations and at elevated temperatures. The spray-dried concentrate with the tridecyl ingredient has superior physical properties also compared to products derived from the dodecyl benzene sulfonate, such as less tackiness.

The alkyl benzene sulfonate detergents are used in the form of water-soluble alkali metal salts such as the sodium or potassium salts, including mixtures thereof. It is understood that there is usually varying amounts of inorganic salts such as sodium sulfate admixed with the sulfonated detergents resulting from the method of manufacture.

The alkali metal soaps of higher fatty acids which are employed have a high titer and in general furnish particularly good properties to the combination. The titer of the soap is usually from about 36° C. to about 57° C. which can be determined by standard methods employed in the soap industry. It is preferred that the titer be from about 38 to 43° C. Such soap material in the product enhances the character of the spray-dried bead as compared with products containing low or medium titer soap, and maintains high detergency in the washing operation. A particular advantage is that, even in the presence of a relatively high amount of synthetic detergent, the soap tends to deposit soap films on the equipment which act as a lubricant in its operation. For example, the use of comparable products which are free from the soap has been found to result in sticking of the doors of the large washing wheels employed in commercial laundries whereas the products herein described have been found to lubricate the equipment sufficiently so that these large doors slide easily. Examples of suitable soaps are the sodium salts of tallow fatty acids having a titer usually of 41.5° to 42° C., sodium soap of mixed tallow and hydrogenated

tallow fatty acids in a 10:1 ratio having a titer of about 43° C., sodium soap of lard fatty acids, hydrogenated and partially hydrogenated mixtures of tallow, grease, coconut fatty acids having similar titer, and the like. Similar potassium soaps may be used also. Thus, the fatty acid soaps may be derived from any suitable higher fatty acids including mixtures of higher fatty acids having about 8 to 22 carbons normally derived from fats, oils, grease and waxes.

The sodium silicate salt employed in the concentrate has a sodium oxide to silica ratio selected from the range of about 1:2 to 1:3.5, preferably 1:2.1 to 1:2.5. Examples are sodium silicate having said ratio of 1:2.35 and 1:2.5 and 1:3.2 by weight. These materials may have varying amounts of water of hydration but for convenience are indicated herein on an anhydrous basis. Such silicates are commonly available in the form of a concentrated solution and the proportions described herein are given on an anhydrous or silicate solids basis.

The silicate is an important ingredient in the concentrate, particularly in the formation of a spray dried product having desirable physical properties. It is known in the art to spray dry aqueous slurries of alkyl benzene sulfonate detergents so as to obtain products having about 30 to 40% detergent admixed with sodium sulfate. Spray-dried compositions have been prepared also wherein alkaline builder salts such as phosphates have been present in substantial amount so that the product contains relatively minor amounts of detergent of the order of 10 to 40% admixed with the sodium sulfate and phosphates.

The manufacture of a concentrate in spray dried form containing a major amount of higher alkyl benzene sulfonate detergent requires special considerations. The use of a slurry containing a high proportion of such organic solids is not conducive to spray-drying procedures which results in a fine hollow, hard bead with minimum fineness and dust. The tendency to other adverse effects such as charring is increased by the presence of other organic solids in the aqueous slurry such as the sodium carboxymethylcellulose and stilbene fluorescent dye. Such a slurry containing high organic solids proves more difficult to crystallize and form hollow glassy-like beads with minimum fineness.

In order to make it sprayable and form a product of desired physical properties, it has been found that the addition of said sodium silicate having a relatively high silica to alkaline oxide ratio modifies the properties of the slurry so as to enable crystallization to occur readily and satisfactorily during the spray-drying process. Hollow hard beads which are essentially non-tacky and free-flowing even upon storage under normal and moderately adverse temperature and humidity conditions are obtained. In general, the amount of silicate which is employed during spray-drying is dependent upon the proportion of organic solids, particularly the alkyl benzene sulfonate material. If the amount of sodium silicate solids in the crutcher slurry is unduly low, the slurry is not sprayable in the desired manner. On the other hand, an excessive proportion of silicate produces a lower active detergent content and tends to impair its utility as an economical replacement for soap. In general, the sodium silicate content is about 12% to 16% of the alkali metal alkyl benzene sulfonate. It is usually present in the composition in an amount from about 2 to 16% by weight of total solids depending upon the amount of the other ingredients, preferably 10 to 20% of the sulfonate.

The carboxyalkylcellulose compound employed is an alkali metal salt of carboxymethylcellulose such as the sodium and potassium salts. Sodium carboxymethylcellulose and the like are available usually in the form of powders of various grades of purity. The commercial grades of sodium carboxymethylcellulose having a purity from about 60 to 100% on a dry basis and which are of low, medium or high viscosity may be employed. The degree of substitution of the carboxymethyl group per an-

hydroglucose unit in the cellulose molecule is variable, but is within the range from about 0.5 to 2, and usually up to about 1.25 substitution. It is preferred to employ carboxylated cellulose having about 0.5 to 0.9 substitution, and particularly about 0.5 to 0.7. It is employed in an amount from about 0.2 to 5%, preferably 1 to 3% by weight.

The combination of the above ingredients with a suitable amount of an alkylolamide results in a product which exhibits greater stability of the foam generated during the laundering operations. The acyl radical of the alkylolamide is selected from the class of fatty acids having 8 to 18 carbons, preferably 10 to 14 carbons, and each alkylol group has up to 3 carbon atoms usually. It is preferred to use the fatty acid monoethanolamides and isopropanolamides whereas the fatty acid diethanolamides show more liquidity. Examples are the lauric, capric, myristic and coconut fatty acid diethanolamides, monoethanolamides and isopropanolamides, and mixtures thereof. There may be employed also the alkylolamides which are substituted by additional alkylol groups, suitable examples being the above monoethanolamides, diethanolamides and isopropanolamides condensed with one or two moles of ethylene oxide. In general the alkylolamides are employed in amounts of about ½ to 10%, and preferably from about 2 to 8% by weight of total solids.

The product advantageously contains a fluorescent dye or optical bleach material substantive to cotton fabrics and similar textiles in the presence of said detergents. They absorb primarily the invisible ultra-violet radiation and emit visible light which is substantially colorless and tends to reduce dulling and yellowing effects on the washed goods. Many types of suitable optical brighteners are known in the art and may be suitably used in the instant invention. Among the different types of materials are optical bleaches having such nuclei as diamino-stilbene, benzimidazole, benzidine, diaminodiphenylurea, diaminodibenzyl and phenylbenzothiazole. It is preferred to employ the stilbene sulfonate fluorescent dyes, particularly those having a triazine group or the like. Examples thereof are the 2-stilbyl-naphthotriazole sulfonates. Such materials are employed in the crutcher in an amount usually from about .01 to 1% by weight of solids, depending upon the type of effects desired.

In the manufacture of the composition, there is formed an aqueous mixture such as a slurry of the higher alkyl benzene sulfonate detergent in substantially homogeneous form. The preferred method comprises forming a fluid aqueous slurry of this detergent which flows or is pumped into a conventional soap crutcher or any other suitable mixing apparatus. The other ingredients are then added in any suitable order or form. The silicate solids are added usually in the form of an aqueous solution as described, and the carboxymethylcellulose and fluorescent dye are added as fine powders or in aqueous or alcoholic solution depending upon desired operating technique. Where the soap and/or amide are added to the crutcher to form a homogeneous spray-dried product, they are added as fine powders, flakes or in molten form and the mixture is stirred to form a homogeneous solution. The slurry should be sufficiently fluid at elevated temperature to insure adequate mixing and formation of the uniform product.

The aqueous mixture or slurry is subjected to a heat-treatment at elevated temperature such as within the range of 100°-210° F. and usually from about 120 to 180° F. and sufficient to maintain all of the ingredients in uniform admixture. The time interval of the mixing operation is not critical and should be sufficient to insure adequate mixing which will be usually at least a few minutes, e.g., 5 minutes, though the mixture may be held for several hours, e.g., 3 hours, before spray-drying. The crutcher mix may be agitated at the desired mixing temperature

indicated or it may be heated to said temperature immediately prior to the drying operation as desired.

The solids content of the slurry is usually within the range of about 40 to 65% by weight, the remainder being substantially free water content. The crutcher mix may be dropped into a holding tank from where it may be added to the drying zone in the spray tower. In spray drying, the aqueous slurry is atomized or forced through spray nozzles into the towers with the small liquid particles becoming solidified and drying as they contact or fall through a stream or vortex of heated air or products of combustion. The gas temperature employed is above 212° F. and usually goes up to 650° F. The composition produced thereby is in the form of hollow thin-walled spheres or beads characterized by excellent solubility in water and relatively uniform particles having a small residual moisture content within the range of about 1 to 15% by weight, preferably 1 to 5%.

As indicated, the alkyl benzene sulfonate is the major ingredient, preferably in an amount of 55-80% of total solids. The ratio of sulfonate to soap is maintained within the range of 95:5 to 70:30 by weight. An increase in soap content substantially beyond this range has been found to adversely affect the amount and type of foam and to decrease detergency effectiveness; whereas the absence of the soap results in a product having insufficient lubricity in use. A ratio of about 80:20 is preferred.

According to an alternative method, the alkyl benzene sulfonate detergent slurry together with the silicate solution, and any of the other ingredients, may be spray-dried to form the desired beads. The remaining ingredients which may be soap, carboxymethylcellulose, fluorescent dye and/or alkylolamide if desired may be mechanically blended with the spray-dried detergent. These materials are mixed in the form of fine powders, usually having the same or smaller particle sizes, compared to the sulfonate beads. They appear to coat the beads and form hard, non-tacky, free-flowing particles of higher density. Any conventional powder mixer operating at room temperature can be suitably employed.

As indicated, this detergent concentrate can be used as a substitute for the conventional soap with many accompanying advantages. In general, one pound of the concentrate can replace three pounds of soap and produce superior results at lower cost. In the washing operations occurring in the wash wheel, the concentrate may be added in the form of powders or in wet form by the addition of pre-formed stock solutions of the concentrate in water. In preparation of the stock solutions, no boiling is required as contrasted with soap solutions. It is preferred that the concentrate be dissolved completely in hot water, such as at a temperature of about 150 to 160° F. with stirring. Such stock solutions having any desired concentration, e.g., about 1-5% by weight, remain in stable and homogeneous form for a long period of time whereas the conventional tallow soap tends to congeal overnight or over a weekend.

The detergent concentrate may be used unbuilt or may be mixed by the operator with any desired amount of compatible builder salts including phosphates, silicates, carbonates, etc. The washing concentration may be varied as desired for optimum effects depending upon the soil classification.

A further embodiment of the present invention relates to conducting the washing operation in the wheel using an aqueous solution of the concentrate admixed with further sodium silicate builder which results in superior detergency in commercial laundering compared to the use of other builder salts. For lightly soiled loads, a ratio of sodium orthosilicate to detergent concentrate of 1:1 to 4:1 by weight is preferred with the total concentration of solids in the bath being preferably 0.2 to 1% by weight. For heavily soiled goods, the ratio of added sodium orthosilicate to the detergent concentrate is preferably 10:1 to

20:1 by weight using washing bath concentrations of 1 to 3% solids.

During the washing operation, the detergent concentrate produces a moderate stable foam of a non-creamy character which can be readily rinsed away. It is possible to save a rinsing step compared to the same operation with soap. The detergent concentrate does not contain sufficient soap as to result in a lime soap problem upon continued use. While the product tends to loosen heavy lime soap and other deposits on the equipment, it does simultaneously lubricate the metal surfaces of the equipment with soap films formed by the reaction of the soap with the soil from the fabrics and the salts in the water. The spent detergent is removed with the draining of the wash water. Occasionally, there may be some suds carried over to the rinsing steps but they are readily rinsed away. In general, a soap regenerator may be retained in the laundering procedure though in certain instances it is possible to virtually eliminate the regenerator depending upon the type and soil of the goods. Following the washing and rinsing steps, the goods are treated in the usual manner, including bleaching, souring, bluing, starching, partial drying and ironing.

Various other materials may be added in any suitable manner to the aqueous slurry prior to spray drying, or as a solution or powder to the spray-dried material so as to be part of the concentrate, or to the washing bath as desired. Examples thereof are non-ionic materials such as higher alkyl phenol ethylene oxide (Igepal CA) used in very small amounts of the order of .1 to 1% of solids to minimize any dusting and larger amounts up to 20% for enhanced cleaning effects, fatty alcohols, anti-corrosion agents, bleaching agents and the like.

It is understood that the following examples are further illustrative of the present invention and they are not intended to limit the scope thereof. All proportions are by weight unless otherwise specified.

Example I

A spray dried detergent concentrate is prepared having the following approximate formulation:

Ingredient:	Percent
Sodium tridecylbenzene sulfonate -----	60.8
Sodium soap of tallow fatty acids -----	15.2
Sodium silicate -----	10.3
Sodium carboxymethylcellulose -----	1.02
Fluorescent dye -----	.37
	87.69

the balance of solids being primarily sodium sulfate with about 2% residual moisture and small amounts of perfume and preservative.

The product is prepared in the following manner: About 69 parts of an aqueous slurry of sodium tridecylbenzene sulfonate (54% solids and 86.5% active ingredients on a solids basis) are added to a conventional soap crutcher containing about 9 parts of water and heated to about 140° F. The alkyl group of the detergent is derived from a mixture of propylene tetramer and pentamer and corresponds on the average to a tridecyl group. The remaining ingredients are added successively with stirring. The sodium silicate ($\text{Na}_2\text{O}:\text{SiO}_2$ ratio of 1:2.35) is added in the form of a 43.5% aqueous solution in an amount of about 12.5 parts. The soap (8.7 parts) having an active content of about 92% with the balance moisture is added in the form of flakes and dissolves in the slurry. The sodium carboxymethylcellulose is a powdered detergent grade having 74% active with the balance inorganic salt and is added with stirring followed by addition of the brightener in powdered form. The brightener is a sulfonated 2-stilbyl-naphthotriazole compound, more specifically having the structure of disodium 4-(sulfomono-naphthotriazole) 2-stilbene sulfonate. The ingredients are stirred for about 10 minutes at a tempera-

ture of about 140° F. and there is formed a smooth pumpable mixture having a total solids content of about 53%.

The slurry is then pumped into a conventional concurrent spray tower through spray nozzles at a temperature of about 180° F. and an approximate spray pressure of about 900 p.s.i.g. The liquid is contacted in the tower with dry air having an inlet temperature of about 560–570° F. and an outlet air temperature of about 300–320° F. to yield about 53% product with about 47% moisture loss. The final product has a total sulfonate detergent and soap content of about 76%, a residual moisture content of about 2% and an apparent density of about 0.27 gm./cc. It is in the form of free-flowing, non-tacky, hollow beads which are attractive in appearance and dust-free. The beads pass through a 20 mesh screen and over 90% are retained on a 100 mesh screen using U.S. sieves on a dry basis.

The omission of the sodium silicate results in a crutcher mix which is not practical to spray-dry and produces a tacky, softer and darker product.

This concentrate is employed in a commercial laundering operation as follows. The concentrate is added to the wash water in the initial washing operation in the form of dry beads or stock solutions. The stock solution is prepared by adding the beads to hot water at a temperature of 150° to 160° F. with mixing to form a homogeneous solution of any convenient concentration, e.g., 1–5% solids, which is stable upon aging. Both the dry powder and stock solutions have been added to the wheel with and without the simultaneous use of added alkaline builder salts, followed by the usual laundering procedure used with soap.

For example, a mixture of light and heavily soiled goods makes up a load of 300 lbs. in the wheel having about 100 gallons of hot water (e.g., 160° F.) to which is added 6 oz. of the detergent concentrate on a solids basis and 18 oz. of sodium orthosilicate in the break-suds operation. The load is washed for about 10–20 minutes with continuous agitation. After draining the wash water, additional water is added for a further suds operation and 4 oz. of the concentrate and 12 oz. of the orthosilicate are added to the wheel. After agitating for about 10 minutes, the wash water is then drained and the clothes are rinsed several times in warm and cold water successively. The remaining operations of bleaching, souring, bluing and starching are conducted in the usual manner. The goods are then spun partially dry to remove excess water and ironed. The laundered garments are extremely white and clean with no scum formation. The equipment operated satisfactorily with no door sticking encountered in extensive testing.

In similar laundering operations, there has been employed for a load of 600 lbs. of lightly soiled linens, 7 oz. of the concentrate solids and 2 lbs. of sodium orthosilicate in the suds operation, followed by the use of 8 oz. of the orthosilicate in a second sudsing step. Then usual remaining operations are conducted and extremely satisfactory results are achieved herein also.

In further testing, a load of 350 lbs. of heavily-soiled towels, aprons and the like are laundered in three successive sudsing operations with 8 oz. of concentrate solids and 4 lbs. orthosilicate in the first sudsing step, 4 oz. concentrate and 2 lbs. orthosilicate in the second sudsing step and 1 lb. orthosilicate in the third sudsing operation, followed by the conventional rinsing, souring operations, etc.

Example II

The procedure of Example I is repeated with the same formulation except that the amount of carboxymethylcellulose is increased to 1.4% and the silicate solids are decreased to 4.6%. The resulting product has similar physical properties and effectiveness in laundry operation.

Example III

The procedure and formulation of Example I is repeated using as the fluorescent dye sodium 4,4'-bis-(2,4-anilino-1,3,5-triazin-6-ylamino)-2,2' stilbene disulfonate. The resulting product possesses equivalent physical and washing properties.

Example IV

The procedure and formulation of Example I is repeated using as the soap a mixture of sodium tallow and hydrogenated tallow in a ratio of about 10:1 by weight which results in a satisfactory concentrate also.

Example V

The procedure and formulation of Example I is repeated using sodium dodecyl benzene sulfonate as the detergent, the dodecyl group being primarily propylene tetramer. The resulting product has good physical properties and can be used as a soap replacement in the commercial laundry. It is inferior to the beads of Example I which are harder and possess superior detergency and foaming power.

Example VI

A concentrate containing spray-dried sulfonate and silicate is dry-blended with the other ingredients as follows:

A spray-dried concentrate of high organic detergent content is prepared having 77.7% sodium tridecyl benzene sulfonate, 11.1% sodium sulfate, 9.8% sodium silicate having a 1:2.35 ratio, 1.4% moisture and .02% antioxidant. The above constituents are admixed as in Example I to form a uniform aqueous slurry having a solids content of about 52% at a temperature of about 120° F. The slurry has a viscosity of about 9,000 cps. and is sprayed similarly to form non-tacky beads having an apparent density of about 0.3 gm./cc.

This spray-dried concentrate in particulate form (79.6 parts) is admixed in a ribbon mixer for about 20 minutes with 17.2 parts of soap chips (sodium tallow soap having a titer of about 41.5° C. and 88% active), 2.8 parts of powdered sodium carboxymethylcellulose and 0.4 parts of stilbene brightener as in Example I. A uniform dry blend is formed with the powdered ingredients tending to coat the spray-dried particles. The resulting particles have an apparent density of about 0.43 gm./cc. with a moisture content of about 3%, a sulfonate content of about 61%, 7.8% silicate solids, 15% soap and 2.8% carboxymethylcellulose.

This product has good physical properties also and exhibits similar effectiveness in commercial laundering as described.

In the above dry blending procedure, there may be added to the mix a minor proportion, e.g., about 7%, of powdered isopropanolamide of lauric and myristic fatty acids in a 70:30 ratio as a further suds builder if desired. The amide can be a supplemental detergent additive or can replace up to an equivalent amount of the sulfonate or soap content. Such product has equivalent physical properties.

Although the present invention has been described with reference to particular embodiments and examples, it will be apparent to those skilled in that art that variations and modifications of this invention can be made and that equivalents can be substituted therefor without departing from the principles and true spirit of the invention.

What is claimed is:

1. A detergent concentrate particularly suitable for commercial laundering operations which consists essentially of about 55 to 80% by weight of an alkali metal higher alkyl benzene sulfonate detergent having about 9 to 15 carbons in the alkyl group and selected from the group consisting of sodium and potassium sulfonates, and minor proportions of alkali metal higher fatty acid soap selected from the group consisting of sodium and potassium salts of fatty acids having a titer of about 38° C. to 43° C., the sulfonate to soap ratio being from about 95:5

to 70:30, sodium silicate having a sodium oxide to silica ratio of about 1:2 to 1:3.5 in an amount from about 5 to 20% of said alkyl benzene sulfonate, and about 0.2 to 5% of alkali metal carboxymethylcellulose selected from the group consisting of sodium and potassium salts, said proportions being by weight of total solids, said concentrate being in particulate form and comprising spray-dried particles of at least said sulfonate and silicate.

2. A detergent concentrate in spray-dried particulate form which consists essentially of about 55 to 80% by weight of sodium higher alkyl benzene sulfonate detergent having 9 to 15 carbons in the alkyl group and sodium soap of saturated fatty acids having a titer of about 38 to 43° C., the sulfonate to soap ratio being from about 95:5 to 70:30 by weight, about 0.2 to 5% by weight of sodium carboxymethylcellulose, about 2 to 16% by weight of sodium silicate having a sodium oxide to silica ratio of about 1:2 to 1:3.5 by weight and sufficient to enable the satisfactory spray-drying of an aqueous medium of the above ingredients to form a spray-dried concentrate particularly suitable for commercial laundering operations.

3. A detergent concentrate in accordance with claim 2 which contains about 0.01 to 1% by weight of a stilbene sulfonate fluorescent dye selected from the group consisting of stilbene sulfonate dyes containing a triazine group and stilbene sulfonate dyes containing a naphthotriazole group.

4. A detergent concentrate particularly suitable for commercial laundering operations which consists essentially of spray-dried particles comprising an alkali metal tridecyl benzene sulfonate selected from the group consisting of sodium and potassium sulfonates in an amount from about 55 to 80% of the composition and sodium silicate having a sodium oxide to silica ratio of about 1:2 to 1:3.5 in an amount from about 5 to 20% by weight of said sulfonate, said spray-dried particles being dry blended with particles of alkali metal higher fatty acid soap selected from the group consisting of sodium and potassium salts of fatty acids having a titer from about 38° C. to 43° C., the sulfonate to soap ratio being from about 95:5 to 70:30, and with 0.2 to 5% of alkali metal carboxymethylcellulose selected from the group consisting of sodium and potassium salts, said proportions being by weight of total solids.

5. A detergent composition concentrate in spray-dried particulate form which consists essentially of about 76% by weight of sodium tridecyl benzene sulfonate detergent and alkali metal soap selected from the group consisting of sodium and potassium salts of saturated higher fatty acids having a titer of about 38 to 43° C. in a ratio of about 80:20 by weight, sodium silicate having a sodium oxide to silica ratio of about 1:2.35 in an amount of about 10-20% by weight of said alkyl benzene sulfonate, 1 to 3% by weight of sodium carboxymethylcellulose and .01 to 1% by weight of a stilbene sulfonate fluorescent dye selected from the group consisting of stilbene sulfonate dyes containing a triazine group and stilbene sulfonate dyes containing a naphthotriazole group, said concentrate being particularly suitable for commercial laundering operations.

6. A process for manufacturing a detergent concentrate particularly suitable for commercial laundering which comprises forming an aqueous slurry of about 40 to 65% solids comprising by weight on a solids basis about 55 to 80% of sodium tridecyl benzene sulfonate detergent, sodium higher fatty acid soap of fatty acids having a titer of about 38° C. to 43° C., said sulfonate to soap ratio being from about 95:5 to 70:30, sodium silicate having a sodium oxide to silica ratio of about 1:2 to 1:3.5 and in an amount from about 5 to 20% of said sulfonate detergent and sufficient to enable the satisfactory spray-drying of said slurry, about 0.2 to 5% of sodium carboxymethylcellulose and about 0.1 to 1% of a stilbene

sulfonate fluorescent dye selected from the group consisting of stilbene sulfonate dyes containing a triazine group and stilbene sulfonate dyes containing a naphthotriazole group, heating said aqueous slurry to a temperature from about 120° to 180° F. and maintaining a substantially homogeneous mixture, spray-drying said slurry at a temperature above 212° F. and below 650° F., and forming a spray-dried detergent concentrate in particulate form having a residual moisture content from about 1 to 5% by weight.

7. A process for manufacturing a detergent concentrate particularly suitable for commercial laundering which consists essentially of about 55 to 80% of alkali metal higher alkyl benzene sulfonate having about 9 to 15 carbons in the alkyl group and selected from the group consisting of sodium and potassium sulfonate, sodium silicate having a sodium oxide to silica ratio of about 1:2 to 1:3.5 in an amount from about 5 to 20% by weight of said sulfonate and sufficient to enable the satisfactory spray-drying of the detergent concentrate composition, alkali metal higher fatty acid soap selected from the group consisting of sodium and potassium salts of fatty acids having a titer of about 38° C. to 43° C., the sulfonate to soap ratio being from about 95:5 to 70:30, and about 0.2 to about 5% of alkali metal carboxymethylcellulose selected from the group consisting of sodium and potassium salts, said amounts being by weight of total solids, which comprises forming an aqueous slurry of about 40 to 65% solids of said sulfonate, silicate, soap and carboxymethylcellulose, heating said aqueous slurry at a temperature of about 100° F. to 210° F. and maintaining a substantially homogeneous mixture, spray-drying said slurry at a temperature above 212° F. and below 650° F. to form spray-dried particles.

8. A process for manufacturing a detergent concentrate particularly suitable for commercial laundering which consists essentially of about 55 to 80% of alkali metal higher alkyl benzene sulfonate having about 9 to 15 carbons in the alkyl group and selected from the group consisting of sodium and potassium sulfonates, sodium silicate having a sodium oxide to silica ratio of about 1:2 to 1:3.5 in an amount from about 5 to 20% by weight of said sulfonate and sufficient to enable the satisfactory spray-drying of the detergent concentrate composition, alkali metal higher fatty acid soap selected from the group consisting of sodium and potassium salts of fatty acid having a titer of about 38° C. to 43° C., the sulfonate to soap ratio being from about 95:5 to 70:30, and about 0.2 to about 5% of alkali metal carboxymethylcellulose selected from the group consisting of sodium and potassium salts, said amounts being by weight of total solids, which comprises forming an aqueous slurry of about 40 to 65% solids of said sulfonate and said silicate, heating said aqueous slurry at a temperature of about 100° F. to 210° F. and maintaining a substantially homogeneous mixture, spray-drying said slurry at a temperature above 212° F. and below 650° F. to form spray-dried particles, dry blending said spray-dried particles containing said sulfonate and silicate with said soap and carboxymethylcellulose in powdered form in said proportions to produce a substantially homogeneous blend in particulate form.

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