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CLEAR HIGH-FOAM LIQUID BUILT DETERGENT

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This invention relates to an improved liquid built detergent. More particularly, this invention relates to a stable, clear built high-foam liquid detergent. This invention also relates to a process for the preparation of the liquid detergent.

A good built liquid detergent should contain all of the essential ingredients of a good, built dry detergent formulation, i.e., a surfactant, a phosphate builder, an anti-corrosion agent, and an anti-redeposition agent. In addition, a foam stabilizer is sometimes necessary when a high persistent foam is desirable, and other ingredients such as optical brighteners, dyes, perfumes, etc. may be incorporated where desired. However, it has not been commercially possible heretofore to incorporate these various ingredients into a liquid formulation and still obtain a stable liquid detergent. Many formulations prepared heretofore have been physically unstable resulting in separation of the detergent into two or more incompatible layers. This has been a serious detriment to commercialization of built liquid detergent in the past. Recombination of the separated detergent before use is often difficult, in addition to being a nuisance. Unless the recombination is performed with care it results in the use in each washing operation of an improperly blended detergent with resultant decrease in the performance of the detergent.

In efforts to overcome the above-mentioned disadvantages, detergent formulators have heretofore resorted to a number of undesirable devices. Sodium silicate is difficult to incorporate into liquid detergent formulations and one common device is to leave out this essential ingredient or to decrease its concentration to much less than that necessary for proper protection of metal surfaces which come in contact with the liquid detergent. This results in excessive corrosion of metal containers and of metal washing machine parts. Another device is to omit sodium carboxy methyl cellulose from the formulation resulting in increased greyness of fabrics laundered with such detergents. Another device is to resort to expensive combinations of specially purified surfactants with unduly large proportions of solubilizers such as sodium xylene sulfonate. These latter substances increase the cost of built liquid detergents without contributing appreciably to detergency. More expensive potassium containing surfactants have also been used in place of the less soluble, less expensive sodium containing surfactants. It is possible to decrease the cost of these built detergents by decreasing the concentration of the expensive specially purified surfactants but the performance suffers. Another device is to reduce the proportions of the essential ingredients in the liquid formulations, but this results in poorer performance unless proportionately larger amounts of the detergent are used in the washing operation. This results in higher cost to the consumer. Moreover, simple dilution of the liquid detergent does not by itself necessarily permit incorporation of the proper amount of certain ingredients such as sodium silicate and sodium carboxy methyl cellulose.

It is an object of this invention to provide a clear, stable high-foam built liquid detergent. It is a further object to provide a stable liquid detergent which contains all of the essential ingredients of a good dry detergent formulation. It is another object of this invention to provide a stable liquid detergent employing cheap commercially available materials. Furthermore, it is another object of this invention to provide a process for the preparation of a clear high-foam built liquid detergent.

According to this invention there is provided a clear high-foam built liquid detergent comprising tetrapotassium pyrophosphate, a sodium metasilicate, carboxy methyl cellulose, sodium dodecyl benzene sulfonate containing a minor amount of sodium xylene sulfonate and/or sodium toluene sulfonate, propylene glycol and water. If desired a foam stabilizer such as fatty acid alkanol amides, water soluble dyes and anti-tarnishing agents for metal surfaces may be included in the formulation.

In the above compositions the pyrophosphate is employed as the phosphate builder and the sodium metasilicate functions as an anti-corrosion agent. The mixture of sodium dodecyl benzene sulfonate when containing a minor amount of sodium xylene sulfonate and/or sodium toluene sulfonate is employed as a surfactant while the carboxy methyl cellulose is used as an anti-redeposition agent. The surfactant may be produced in either of two ways. The sodium dodecyl benzene sulfonate may be physically mixed with a minor amount of the sodium xylene sulfonate and/or sodium toluene sulfonate; or the xylene and/or toluene may be mixed in minor amounts into the sodium dodecyl benzene during the sulfonation. The amount of surfactant that may be incorporated in our formulations is dependent upon its method of preparation. A larger amount of the sodium xylene sulfonate and/or sodium toluene sulfonate may be incorporated in the detergent preparation if it is added to the soduim dodecyl benzene during the sulfonation. If the sodium xylene sulfonate and/or sodium toluene sulfonate is physically mixed with the sodium dodecyl benzene sulfonate, a smaller amount must be used. It is preferred to add our surfactant to the formulation as a cheap 35% solids' content water slurry in which case, the water content of the slurry forms a portion of the total water content of our compositions. Of the solids preferably about 90% is active, the other 10% being sodium sulfate. Hereinafter whenever we refer to the weight percent of the surfactant employed it will be understood to refer to the solids' content. The sodium metasilicate employed in the formulation may be either anhydrous sodium metasilicate or sodium metasilicate pentahydrate.

The formulations of this invention may contain from about 7.5 to about 27.5% by weight tetrapotassium pyrophosphate, from about 0.1 to about 5% sodium metasilicate calculated as anhydrous sodium metasilicate, from about 0.1 to about 0.6% by weight carboxy methyl cellulose, from about 2.6 to about 17.5% by weight of the surfactant, from about 5 to about 9% by weight propyl ene glycol, with water making up the balance.

The active surfactant comprises preferably about 90 to 95% sodium dodecyl benzene sulfonate and about 5 to 10% of the sodium xylene sulfonate and/or sodium toluene sulfonate. When the surfactant is prepared by physical mixing it may only be incorporated in the detergent formulation in a range of about 3.5 to about 14.0% by weight. Furthermore, the amount of sodium xylene sulfonate and/or sodium toluene sulfonate that can be mixed with the sodium dodecyl benzene sulfonate should be limited to between about 7.5 and 5% by weight.

The amount of carboxy methyl cellulose which can be employed depends upon the degree of substitution of carboxyl groups in the molecule. The greater the degree of substitution, the more soluble the product. However, at the higher degree of substitution, the soil anti-redeposition property may be slightly adversely affected. Care must be taken, however, that the recommended level of the carboxy methyl cellulose content is not exceeded, otherwise flocculation will occur. When the CMC corre-

sponds to a product such as that known under the trademark of "Hercules CMC 70 M," the amount of CMC employed should not exceed 0.3 weight percent of the formulation. When the CMC corresponds to a product such as that known under the trademark of "Hercules CMC 120 H," the maximum of CMC employed should not exceed 0.6 weight percent of the formulation.

The amount of phosphate that may be employed in the formulation varies inversely with the surfactant used. The critical range of tetrapotassium pyrophosphate as indicated above is from about 7.5 to about 27.5 weight percent. The critical range of the surfactant concentration varies with the phosphate concentration from a maximum of 2.6 to 17.5 weight percent at 7.5 weight percent tetrapotassium pyrophosphate to a minimum of 6.0 to 14.9 weight percent at 27.5 tetrapotassium pyrophosphate. When the surfactant is prepared by physical mixing, its range varies with the phosphate concentration from a maximum 3.5 to 14.0 weight percent at 7.5 weight percent tetrapotassium pyrophosphate to a minimum of 6.0 to 13.1 weight percent at 27.5 tetrapotassium pyrophosphate. The range of propylene glycol employed varies with the amount of phosphate used.

The ingredients and proportions thereof comprising the formulations of this invention are critical. Small deviations from the recommended contents cause adverse effects. For example, when the surfactant mixture is replaced by another alkyl aryl sulfonate alone having the same assay, the formulation breaks down into two incompatible layers. The amount of propylene glycol employed is specific for the particular amount of surfactant employed, for example, when 14% by weight of the surfactant is employed, 9.3% by weight propylene glycol causes, after several weeks of storage, crystallization. These crystals appear to be tetrasodium pyrophosphate. When 15.8% by weight surfactant is employed, less than 8.5% propylene glycol, after several weeks, causes a separation into two liquid phases. A formulation containing about 14% by weight surfactant has better stability at low temperatures than those containing the maximum amount of surfactant and the formulation is stable over temperature ranges of about 6 to 60° C. When the maximum amount of surfactant is employed a gelatinous material separates below about 23° C.

In order to obtain the desired product, the procedure which will be described below should be followed. Deviation from this procedure results in undesirable products.

According to this procedure, the tetrapotassium pyrophosphate is dissolved in water. The anhydrous sodium metasilicate is then added and is completely dissolved before adding any of the ingredients. Immediately after dissolving the phosphate and silicate, the carboxy methyl cellulose is added. The heat of solution of the phosphate and silicate will aid in the dispersion of the CMC. In order to attain the maximum CMC dispersion, it is required that the solution be thoroughly agitated. Inadequate dispersion of the CMC will lead to flocculation. After the CMC has been dispersed in the liquid medium, the propylene glycol is added. Upon the addition of the propylene glycol, an opaque emulsion is formed which becomes clear upon the addition of the surfactant. The surfactant should be added in small increments with each increment mixed thoroughly before a further addition is made. Finally, the lauric diethanolamide is added to the solution. For optimum clarity, a polish filtration step may be employed. This is sometimes desirable because of the occasional presence of insolubles in commercial tetrapotassium pyrophosphate.

The following examples are illustrative of the procedure for the formulation of the compositions of this invention and are also illustrative of the formulations themselves. In the formulation the term "Mixture A" will refer to the surfactant prepared by the formation of the sodium toluene sulfonate and/or sodium xylene sulfonate during the sulfonation of the dodecyl benzene. The term "Mixture B" will be employed to show the surfactant when prepared by physical mixing. In the examples all percents will be by weight.

Example 1

A detergent having the following composition was prepared by the following procedure:

	Percent
Tetrapotassium pyrophosphate	20
Sodium metasilicate	3
Sodium carboxy methyl cellulose	0.3
Sodium dodecyl benzene sulfonate (Mixture A)	14
Lauric diethanolamide	2
Propylene glycol	8.7
Water	52

Twenty parts of tetrapotassium pyrophosphate were added to 26 parts of water at about 25° C. Immediately after the tetrapotassium pyrophosphate was in solution, the sodium metasilicate was added and agitated to assure complete solution. The sodium carboxy methyl cellulose was then added with good agitation to take advantage of the heat of the solution of the phosphate and silicate. After complete dispersion of the CMC, the propylene glycol was added, resulting in an opaque emulsion. The sodium dodecyl benzene sulfonate mixture was then dissolved in 26 parts of water and then added slowly with continuous agitation resulting in a clear solution. The lauric diethanolamide was added last. The resultant built detergent is a clear, stable liquid which does not show evidence of precipitation or phase separation when stored at about 25° C. for several months.

Example 2

The detergent of Example 1 was prepared by the following procedure:

Fourteen parts of the sodium dodecyl benzene sulfonate mixture were dissolved in 52 parts of water at about 25° C. with continuous agitation. The lauric diethanolamide was then dissolved and the propylene glycol added. The tetrapotassium pyrophosphate was added next and the sodium metasilicate was added, resulting in a milky solution. This mixture when heated to 60° C. with good agitation, results in a clear solution. The carboxy methyl cellulose was added last to the hot solution and dispersed by vigorous and prolonged agitation until a clear solution was obtained. The resultant detergent is a clear hot solution which on cooling to about 25° C., forms a flocculant precipitate which will not redissolve at 25° C. even with prolonged agitation.

Examples 3–12

Component	Examples									
	3	4	5	6	7	8	9	10	11	12
Tetrapotassium Pyrophosphate, percent	5	7.5	27.5	30	7.5	7.5	7.5	27.5	27.5	27.5
Sodium Metasilicate, percent	3	3	3	3	3	3	3	3	3	3
Sodium Carboxymethylcellulose, percent	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
Propylene Glycol, percent	8.7	8.7	8.7	8.7	4.5	5	9	8.5	9.0	9.5
Sodium Dodecyl Benzene Sulfonate (Mixture A), percent	14	14	14	14	14	14	14	14	14	14
Lauric Diethanolamide, percent	2	2	2	2	2	2	2	2	2	2
Water, percent	67	64.5	44.5	42	68.7	68.2	64.2	44.7	44.2	43.7

The formulations listed in Examples 3 to 12 were prepared by the technique illustrated in Example 1. The products illustrated by the formulations in Examples 3, 6, 7, 9, 10 and 12 were not stable. They developed a sediment or became two phase systems after several hours storage. These formulations demonstrate the critical composition range of the tetrapotassium pyrophosphate and the propylene glycol.

Examples 13–20

Component	Examples							
	13	14	15	16	17	18	19	20
Tetrapotassium Pyrophosphate, percent	7.5	7.5	7.5	7.5	27.5	27.5	27.5	27.5
Sodium Metasilicate, percent	3	3	3	3	3	3	3	3
Sodium Carboxy methylcellulose, percent	.3	.3	.3	.3	.3	.3	.3	.3
Propylene Glycol, percent	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Sodium Dodecyl Benzene Sulfonate (Mixture A), percent	1.75	2.62	17.5	18.4	5.25	5.95	14.9	15.8
Lauric Diethanolamide, percent	2	2	2	2	2	2	2	2
Water, percent	76.75	75.88	61	60.1	53.25	52.55	43.6	42.7

The formulations listed in Examples 13 to 20 were prepared by the technique illustrated in Example 1. The products illustrated by the formulations in Examples 13, 16, 17 and 20 were not stable. They developed a sediment or became two phase systems after several hours storage. These formulations demonstrate the critical range of the previously described surfactant mixture, at the maximum and minimum tetrapotassium pyrophosphate contents.

Examples 21–28

Components	Examples							
	21	22	23	24	25	26	27	28
Tetrapotassium Pyrophosphate, Percent	7.5	7.5	7.5	7.5	27.5	27.5	27.5	27.5
Sodium Metasilicate, Percent	3	3	3	3	3	3	3	3
Sodium Carboxymethylcellulose, Percent	.3	.3	.3	.3	.3	.3	.3	.3
Propylene Glycol, Percent	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Sodium Dodecyl Benzene Sulfonate (Mixture B), Percent	14.9	14	3.5	2.62	14	13.1	5.95	5.25
Lauric Diethanolamide, Percent	2	2	2	2	2	2	2	2
Water, Percent (to balance).								

The formulations listed in Examples 21 to 28 were prepared by the technique illustrated in Example 1. The products illustrated by the formulations in Examples 21, 24, 25 and 28 were not stable. They developed a sediment or became two phase systems after several hours storage. These formulations demonstrate the critical range of the physical mixtures and sulfonates at the maximum and minimum tetrapotassium pyrophosphate contents.

Examples 29–38

Component	Examples									
	29	30	31	32	33	34	35	36	37	38
Tetrapotassium Pyrophosphate, Percent	20	20	20	20	20	20	20	20	20	20
Na_2SiO_3, Percent	------	5	------	5.5	------	3	3	3	3	3
$Na_2SiO_3.5H_2O$, Percent	------	------	8.7	------	9.6	------	------	------	------	------
Sodium Carboxymethylcellulose, Percent	------	.3	.3	.3	.3	.6	.3	.3	.3	.3
Propylene Glycol, Percent	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Sodium Dodecyl Benzene Sulfonate A, Percent	14	14	14	14	14	14	14	14	14	14
Lauric Diethanolamide, Percent	2	2	2	2	2	------	4.5	------	5.0	------
Lauric monoisopropanolamide, Percent	------	------	------	------	------	------	------	4.5	------	5.0
Water, Percent	55.3	49.9	46.2	49.5	45.4	53.7	49.4	49.4	49	49
Brightener, Dye, Percent	------	0.1	0.1	------	------	------	0.1	0.1	------	------

The formulations listed in Examples 29 to 38 were prepared by the technique illustrated in Example 1. The products illustrated by the formulations in Examples 32, 33, 37 and 38 were not stable. They developed a sediment or became two phase systems after several hours storage. These examples demonstrate the compatibility of the full formulation with such other minor components as optical brighteners, dyes, perfumes, and tarnish inhibitors. These examples demonstrate the compatibility of the two common types of foam stabilizers with this invention. These examples also indicate the usefulness of both commercial forms of sodium metasilicate. These examples also illustrate the maximum critical quantities of CMC, silicate, and foam stabilizer compatible with the formulations embodied in this invention.

Examples 39 to 45

Component	Examples						
	39	40	41	42	43	44	45
Tetrapotassium Pyrophosphate, percent	20	20	20	20	20	20	20
Sodium Metasilicate, percent	3	3	3	3	3	3	3
Sodium Carboxymethylcellulose, percent	.3	.3	.3	.3	.3	.3	.3
Sodium Dodecyl Benzene Sulfonate and B (7.5% NaTS or NaXS), percent	13.1	12.2					
Sodium Dodecyl Benzene Sulfonate and B (10% NaTS or NaXS), percent			11.4	10.5			
Sodium Dodecyl Benzene Sulfonate and B (15% NaTS or NaXS), percent					7.9	7	
Sodium Dodecyl Benzene Sulfonate and B (0% NaTS or NaXS), percent							.87
Propylene Glycol, percent	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Lauric Diethanolamide, percent	2	2	2	2	2	2	2
Water	52.9	[1] 53.8	54.6	[1] 55.5	58.1	[1] 59	65.13

[1] Stable.

These formulations are prepared by the good procedure described in Example 1. It is the purpose of these examples to demonstrate the decrease in the maximum quantity of sodium dodecyl benzene sulfonate mixture B compatible with a given quantity of tetrapotassium pyrophosphate as the sodium xylene (or toluene) sulfonate content increases in surfactant mixture. Examples 39, 41, 43, and 45 are of unstable formulations. These products show either sedimentation or the formation of a two phase system within several hours after preparation. Example 45 demonstrates the need for sodium xylene (or toluene) sulfonate in the surfactant mixture.

The detergents of this invention are all purpose detergents and are suitable for laundering cotton, woolen goods and fine fabrics, for cleaning hard surfaces, and for other wetting and detergent applications.

Example 46

The detergent properties of the clear built liquid detergent of Example 1 are tested by techniques similar to those described in the manual, "Detergency Evaluation and Testing," by J. C. Harris, (Interscience Publishers Inc. 1954). A single wash technique is carried out in a Launder-Ometer (Atlas Electric Devices Co.) at 140° F., using two commercially soiled cotton fabrics (Foster D. Snell Soiled Cotton 159 and American Conditioning House 115) in distilled water, and with three commercially soiled cotton fabrics (Foster D. Snell Soiled Cotton 159, American Conditioning House 115, and American Conditioning House 130) in 21 g.p.g. synthetic hard water. A redeposition test is carried out in a Launder-Ometer using bleached desized Indian Head cotton fabric and a 0.0025% suspension of carbon black in the detergent solutions in 18 g.p.g. water at 140° F. Concentration of the clear, built liquid detergent in the tests is 0.50% equivalent to 0.20% solids. Duplicate tests are run simultaneously with a 0.20% solution of a commercially available, solid, spray-dried detergent having the following approximate composition:

	Percent
Sodium tripolyphosphate	50
Sodium silicate (as SiO_2)	03.25
Anionic surfactant mixture	22.85
Sodium carboxymethylcellulose	0.2
Sodium sulfate	17
Water, perfume, and other minor ingredients	6.7

In the following table numbers represent the increase in reflectance of the soiled fabrics during the single wash. Each number represents the average of 6 reflectance readings made on 3 replicate fabric samples:

Type of fabric	Water Hardness, g.p.g.	Detergent of Example 1	Spray-Dried Detergent
ACH-115	0	21.1	23.7
FDS-159	0	12.0	11.3
ACH-115	21	18.4	19.9
ACH-130	21	15.8	18.7
FDS-159	21	8.2	5.9

In the carbon redeposition test in 18 g.p.g. hard water, three replicate swatches decreased in reflectance by an average of 22.0 units when tested with the clear, built liquid detergent, whereas three swatches tested with the spray-dried detergent decreased in reflectance by an average of 23.8 units.

These data show the excellent detergent properties of the clear, built liquid detergent of this invention.

Pursuant to the requirements of the patent statutes, the principle of this invention has been explained and exemplified in a manner so that it can be readily practiced by those skilled in the art, such exemplification including what is considered to represent the best embodiment of the invention. However, it should be clearly understood that, within the scope of the appended claims, the invention may be practiced by those skilled in the art, and having the benefit of this disclosure, otherwise than as specifically described and exemplified herein.

We claim:

1. A clear stable liquid high-foam built detergent composition which consists essentially of about 7.5 to about 27.5% by weight tetrapotassium pyrophosphate, from about 0.1 to about 5% by weight sodium metasilicate calculated as anhydrous sodium metasilicate, from about 0.1 to about 0.6 by weight sodium carboxy methyl cellulose, from about 5 to about 9% by weight propylene glycol, from about 43.6 to about 75.9% by weight water, and a surface active mixture consisting of sodium dodecyl benzene sulfonate and a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate, said surface active mixture consisting of about 90 to about 95% by weight sodium dodecyl benzene sulfonate and being present in the amounts of about 2.6 to about 17.5% by weight.

2. A clear stable high-foam liquid built detergent composition according to claim 1 wherein said propylene glycol is present in amounts of about 5 to about 8.7% by weight, said surface active mixture is present in the amounts of about 2.6 to about 17% by weight and said tetrapotassium pyrophosphate is employed in amounts of about 7.5% by weight.

3. A clear stable high-foam liquid built detergent composition consisting essentially of about 7.5% by weight tetrapotassium pyrophosphate, from about 0.1 to about 5% weight percent sodium metasilicate calculated as anhydrous sodium metasilicate, from about 0.1 to about 0.6% by weight sodium carboxy methyl cellulose, from about 5 to about 8.7% by weight propylene glycol, from about 43.6 to about 75.9% by weight water, and a surface active mixture consisting of about 90 to about 95% by weight of sodium dodecyl benzene sulfonate and about 5 to about 10% by weight of a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate, said surface active mixture being present in amounts of about 2.6 to about 17.5% by weight and being produced by the simultaneous sulfonation of a mix-

ture of dodecyl benzene and a compound selected from the group consisting of xylene and toluene.

4. A clear stable high-foam liquid built detergent composition which consists essentially of about 27.5% by weight tetrapotassium pyrophosphate, from about 0.1 to about 5 % by weight sodium metasilicate calculated as anhydrous sodium metasilicate, from about 0.1 to about 0.6% by weight sodium carboxy methyl cellulose, from about 8.7 to about 9% by weight propylene glycol, from about 43.6 to 75.9% by weight water and a surface active mixture consisting of about 90 to 95% by weight of sodium dodecyl benzene sulfonate and about 5 to about 10% by weight of a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate, said surface active mixture being present in amounts of about 6.0 to about 14.9% by weight and being produced by the simultaneous sulfonation of a mixture of dodecyl benzene and a compound selected from the group consisting of xylene and toluene.

5. A clear stable high foam liquid built detergent composition consisting essentially of about 7.5% by weight tetrapotassium pyrophosphate, from about 0.1 to about 5% by weight sodium metasilicate calculated as anhydrous sodium metasilicate, from about 0.1 to about 0.6% by weight sodium carboxy methyl cellulose, from about 5 to about 8.7 by weight propylene glycol, from about 45.4 to about 75% by weight water and a surface active mixture consisting of about 92.5 to about 95% by weight of sodium dodecyl benzene sulfonate and about 5 to about 7.5% by weight of a compound selected from the group consisting of sodium toluene sulfonate and sodium xylene sulfonate, said surface active mixture being present in amounts of about 3.5 to about 14.0% by weight and being produced by physically mixing sodium dodecyl benzene sulfonate with a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate.

6. A clear stable high foam liquid built detergent composition which consists essentially of about 27.5% by weight tetrapotassium pyrophosphate, from about 0.1 to about 5% by weight sodium metasilicate calculated as anhydrous sodium metasilicate, from about 0.1 to about 0.6% by weight sodium carboxy methyl cellulose, from about 8.7 to about 9% by weight propylene glycol, from about 45.4 to about 75% by weight water and a surface active mixture consisting of about 92.5 to about 95% by weight of sodium dodecyl benzene and about 5 to about 7.5% by weight of a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate, said surface active mixture being present in amounts of about 6.0 to about 13.1% by weight and being produced by physically mixing sodium dodecyl benzene sulfonate with a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate.

7. A clear stable high foam liquid built detergent composition consisting essentially of about 20% by weight tetrapotassium pyrophosphate, about 3% by weight anhydrous sodium metasilicate, about 0.3% by weight sodium carboxy methyl cellulose, about 8.7% propylene glycol, about 2% lauric diethanolamide, about 52% by weight water and a surface active mixture consisting of about 92.5% to about 95% by weight of sodium dodecyl benzene sulfonate and about 5 to about 7.5% by weight of a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate, said surface active mixture being present in amounts of about 14% by weight and being produced by physically mixing sodium dodecyl benzene sulfonate with a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate.

8. A method for the preparation of a clear high-foam stable liquid built detergent composition which consists essentially of dissolving about 7.5 to about 27.5% by weight tetrapotassium pyrophosphate in about 43.6 to about 75.9% by weight water, then adding a compound selected from the group consisting of anhydrous sodium metasilicate and sodium metasilicate pentahydrate to said solution in the amount of from about 0.1 to about 5% by weight calculated as anhydrous sodium metasilicate, then adding with thorough agitation from about 0.1 to about 0.6% by weight sodium carboxy methyl cellulose to said solution, adding from about 5 to about 9% by weight propylene glycol, then adding in small increments with thorough agitation a surface active mixture consisting of sodium dodecyl benzene sulfonate and a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate, said surface active mixture consisting of about 90 to about 95% by weight sodium dodecyl benzene sulfonate and being present in the amount of about 3.5 to about 14.0% by weight and produced by physically mixing sodium dodecyl benzene sulfonate with a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate.

9. The method of claim 8 in which the solution is filtered to remove any insolubles.

10. A method for the preparation of a clear high-foam stable liquid built detergent composition which consists essentially of dissolving about 7.5 to about 27.5% by weight tetrapotassium pyrophosphate in about 43.6 to about 75.9% by weight water, then adding a compound selected from the group consisting of anhydrous sodium metasilicate and sodium metasilicate pentahydrate to said solution in the amount of from about 0.1 to about 5% by weight calculated as anhydrous sodium metasilicate, then adding with thorough agitation from about 0.1 to about 0.6% by weight sodium carboxy methyl cellulose to said solution, adding from about 5 to about 9% by weight propylene glycol, then adding in small increments with thorough agitation a surface active mixture consisting of sodium dodecyl benzene sulfonate, and a compound selected from the group consisting of sodium xylene sulfonate and sodium toluene sulfonate, said surface active mixture consisting of about 92.5 to about 95% by weight sodium dodecyl benzene sulfonate and being present in the amount of about 2.6 to about 17.5% by weight and produced by the simultaneous sulfonation of a mixture of dodecyl benzene and a compound selected from the group consisting of xylene and toluene.

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