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LIQUID DETERGENT COMPOSITIONS

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The invention relates to general purpose detergent compositions in the form of stable, opaque viscous liquids.

General purpose synthetic detergent compositions in powder form are well known. These usually contain a synthetic detergent and an alkaline phosphate material such as a pyrophosphate or tripolyphosphate. They may also contain organic suds boosters such as fatty acid alkylolamides. Other normal ingredients of such compositions are alkali metal silicates, carboxymethyl cellulose, optical bleaching agents, colour, perfume, tarnish inhibitors and so forth. The synthetic detergents most commonly used are alkyl aryl sulphonates and especially sodium alkylbenzene sulphonate, the alkyl radical of which is derived from a propylene tetramer.

These powdered synthetic detergent compositions, although very effective in washing performance, have neverthe less certain disadvantages in use such as slow solution rate, tendency to form lumps, difficulty in dispensing accurate quantities and so forth. These difficulties do not exist with a liquid composition.

Liquid detergent compositions are well-known as shampoos and fine-wash products, but such compositions do not contain alkaline materials such as phosphates in the proportions necessary to produce a satisfactory general purpose detergent. Attempts to add such salts to the liquid detergent compositions lead to separation of the product into two or more phases unless the product is so dilute as to be unsatisfactory for the market. Hitherto the general purpose liquid synthetic detergents have been single-phase liquid compositions and accurate control of the ionic composition of the liquid is necessary to avoid separation into two or more phases as a result of temperature change.

It is the object of the present invention to provide liquid detergents in the form of opaque mucilaginous liquids which do not separate on standing and which remain stable over the temperature range 40° F. to 80° F.

According to the present invention, there is provided a heavy-duty detergent composition in the form of a stable, opaque, mucilaginous, aqueous liquid which does not separate into two or more layers and which contains, by weight, from 10% to 22% of sodium dodecyl benzene sulphonate, from 15% to 22% of potassium pyrophosphate, from 2% to 5% of fatty acid monoethanolamide in which the fatty acid moiety is derived from coconut oil, from 3% to 5% of ethyl alcohol and from 3% to 5% of glycerol or from 1% to 3% of propylene glycol.

The polyhydric alcohol (propylene glycol or glycerol) and the ethyl alcohol together are responsible for the mucilaginous nature of the fluid. The ratio of ethyl alcohol to polyhydric alcohol is critical and should be determined by experiment for any particular composition. The product is best made by mixing together at about 70° F. all the ingredients except ethyl alcohol and then withdrawing a sample of the mix, dividing it into several portions and mixing into each portion different proportions of ethyl alcohol within the range stated above. The samples are then allowed to stand for a few minutes after which it will be found that the samples to which too little or too much ethyl alcohol has been added separate into two or more distinct phases whereas the samples with the correct proportion of ethyl alcohol have a stable mucilaginous character.

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The optimum proportion of ethyl alcohol can then be mixed into the bulk composition.

The composition of the present invention may contain up to 2.5% sodium silicate solids and up to 6% urea.

When sodium silicate solids are present the proportion of alkyl dodecyl benzene sulphonate preferably ranges from 10% to 15% and the proportion of potassium pyrophosphate preferably ranges from 15% to 20%.

The compositions may also contain other, normal additives for detergent compositions such as optical bleaching agents, tarnish inhibitors, colour and perfume.

The following are examples of liquid detergent compositions according to the invention:

	A	B	C
	Percent	Percent	Percent
Sodium dodecylbenzene sulphonate	13	13	20
Potassium pyrophosphate	18	18	18
Coconut monoethanolamide	3	3	3
Ethyl alcohol	4	4	4
Glycerol	5		
Propylene glycol		1.5	1.5
Sodium silicate solids	2.5	2.5	
Optical bleaching agent	0.06	0.06	0.06
Benzotriazole	0.02	0.02	0.02
Urea			4
Water, balance to make	100	100	100

I claim:

1. A non-soap heavy-duty detergent composition in the form of an opaque, mucilaginous, aqueous liquid which remains stable over the temperature range of 40° to 80° F. and which does not separate into two or more layers, consisting essentially of sodium dodecyl benzene sulphonate in a proportion of 10–22% by weight, potassium pyrophosphate in a proportion of 15–22% by weight, a fatty acid monoethanolamide, in which the fatty acid moiety is derived from coconut oil, in a proportion of 2 to 5% by weight, ethyl alcohol in a proportion of 3 to 5% by weight and a polyhydric alcohol selected from the class consisting of glycerol in a proportion of 3 to 5% by weight and propylene glycol in a proportion of 1 to 3% by weight, and water from about 41% to about 69%, the proportions of the ethyl alcohol and polyhydric alcohol being adjusted to impart a mucilaginous character to the fluid.

2. A non-soap heavy-duty detergent composition in the form of an opaque, mucilaginous, aqueous liquid which remains stable over the temperature range of 40° to 80° F. and which does not separate into two or more layers, consisting essentially of sodium dodecyl benzene sulphonate in a proportion of 10–15% by weight, potassium pyrophosphate in a proportion 15–20% by weight, a fatty acid monoethanolamide, in which the fatty acid moiety is derived from coconut oil, in a proportion of 2 to 5% by weight, ethyl alcohol in a proportion of 3 to 5% by weight, sodium silicate in a proportion of at most 2.5% on a dry weight basis and a polyhydric alcohol selected from the class consisting of glycerol in a proportion of 3 to 5% by weight and propylene glycol in a proportion of 1 to 3% by weight, and water from about 47.5% to about 69%, the proportions of the ethyl alcohol and the polyhydric alcohol being adjusted to impart a mucilaginous character to the fluid.

3. A non-soap heavy-duty detergent composition in the form of an opaque, mucilaginous, aqueous liquid which remains stable over the temperature range of 40° to 80° F. and which does not separate into two or more layers, consisting essentially of sodium dodecyl benzene sulphonate in a proportion of 10–22% by weight, potassium pyrophosphate in a proportion of 15–22% by weight, a fatty acid monoethanolamide, in which the fatty acid moiety is derived from coconut oil, in a proportion of 2 to 5% by weight, ethyl alcohol in a proportion of 3 to

5% by weight, urea in a proportion of at most 6% by weight, and a polyhydric alcohol selected from the class consisting of glycerol in a proportion of 3 to 5% by weight and propylene glycol in a proportion of 1 to 3% by weight, and water from about 35% to about 69%, the proportions of the ethyl alcohol and polyhydric alcohol being adjusted to impart a mucilaginous character to the fluid.

4. A non-soap heavy-duty detergent composition in the form of an opaque, mucilaginous, aqueous liquid which remains stable over the temperature range of 40° to 80° F. and which does not separate into two or more layers, consisting essentially of sodium dodecyl benzene sulphonate in a proportion of 10-15% by weight, potassium pyrophosphate in a proportion of 15-20% by weight, a fatty acid monoethanolamide, in which the fatty acid moiety is derived from coconut oil, in a proportion of 2 to 5% by weight, ethyl alcohol in a proportion of 3 to 5% by weight, urea in a proportion of at most 6% by weight and a polyhydric alcohol selected from the class consisting of glycerol in a proportion of 3 to 5% by weight and propylene glycol in a proportion of 1 to 3% by weight, and water from about 44% to

about 69%, the proportions of the ethyl alcohol and polyhydric alcohol being adjusted to impart a mucilaginous character to the fluid.

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