

1

2,947,702

LIQUID DETERGENT COMPOSITIONS

Ronald Coskie, Whitley Bay, Northumberland, England,
assignor to The Procter & Gamble Company, Ivory-
dale, Ohio, a corporation of Ohio

No Drawing. Filed Jan. 21, 1958, Ser. No. 710,203

Claims priority, application Great Britain Jan. 23, 1957

2 Claims. (Cl. 252—137)

The invention relates to liquid detergent compositions.

Liquid detergent compositions intended for use as shampoos or for washing delicate fabrics such as woollen and silk goods are well-known. These actually contain, as active ingredients ammonium or amine salts of anionic synthetic detergents or non-ionic detergents such as the condensation products of ethylene oxide with various hydrophobic compounds containing an active hydrogen atom (e.g. fatty acids, fatty alcohols, fatty amines and alkyl phenols). The compositions are practically free from inorganic salts. It is desirable, even for fine-wash products and dishwashing compositions that the composition should contain some inorganic builder such as a pyrophosphate or a tripolyphosphate in order to obtain satisfactory performance in washing operations. Attempts to add such inorganic builders 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.

It has now been unexpectedly found that liquid detergent compositions containing a satisfactory concentration of sodium dodecylbenzene sulphonate and potassium pyrophosphate, which remain as clear liquids over the temperature range 40° F. to 80° F. can be prepared if a combination of urea, ethyl alcohol and certain hydroxy acids are used as solubilising agents and certain limitations regarding the proportions of the various ingredients are observed.

According to the present invention, therefore, there is provided a liquid detergent composition which is a clear liquid over the temperature range 40° F. to 80° F. and which contains from 10% to 25% sodium dodecylbenzene sulphonate, from 1% to 5% fatty acid monoethanolamide in which the acid moiety contains from 10 to 14 carbon atoms, from 2% to 10% potassium pyrophosphate, from 10% to 12% urea, from 5% to 10% ethyl alcohol and from 1.5% to 4% citric acid or from 1.5% to 3% tartaric acid or from 2% to 4% salicylic acid, the balance being water with or without optional ingredients as hereinafter specified. The pH of the composition is adjusted to pH 5 to 7.

As dodecylbenzene sulphonate component it is preferred to use a sodium dodecylbenzene sulphonate in which the dodecyl group is derived from propylene tetramer. The preferred fatty acid monoethanolamide is that derived from the fatty acids of coconut oil. A proportion of ethyl alcohol is necessary to ensure homogeneity. If insufficient alcohol is included in the composition there is a tendency for an upper layer of concentrated material to separate. If too much alcohol is included there is a tendency for a clear layer free from inorganic ingredients to separate at the bottom of the liquid. Alcohol proportions in the ranges specified above have been found to give satisfactory products.

The compositions may contain additional ingredients which are usual in detergent compositions such as perfume, colour, optical bleaching agents and anti-tarnishing agents.

The following are examples of liquid detergent com-

2

positions suitable for washing fine silk or woollen garments or for dishwashing (percentages are by weight):

Examples

Composition	A, percent	B, percent	C, percent	D, percent	E, percent
Sodium dodecyl (tetrapropylene) benzene.....	25.0	25.0	25.0	25.0	25.0
Sodium sulphate ¹	2.6	2.6	2.6	2.6	2.6
Urea.....	12.0	12.0	12.0	12.0	12.0
Nonoethanolamide of coconut fatty acids.....	3.0	3.0	3.0	3.0	3.0
Ethyl alcohol.....	5.0	5.0	5.0	5.0	5.0
Potassium pyrophosphate.....	6.0	6.0	6.0	8.0	10.0
Citric acid.....	3.0			2.0	3.0
Tartaric acid.....		2.0			
Salicylic acid.....			3.0		
Water.....	Balance	Balance	Balance	Balance	Balance

¹ (The sodium sulphate is associated with the sodium dodecyl benzene sulphonate.)

These compositions are all clear liquids which remain clear when cooled to 40° F.

Compositions similar to the above but containing lower proportions of sodium dodecylbenzene sulphonate are also clear liquids which are stable at 40° F., but when the concentration of sodium dodecylbenzene sulphonate in the composition is reduced, proportionately more of the liquid detergent composition must be used to obtain satisfactory washing. The proportion of sodium dodecylbenzene sulphonate in the finished liquid composition should not therefore be less than 10%.

I claim:

1. A clear liquid detergent composition which remains clear over the temperature range 40° F. to 80° F. and consisting essentially of, by weight, from 10% to 25% sodium dodecylbenzene sulphonate, from 1% to 5% fatty acid monoethanolamide in which the fatty acid moiety contains from 10 to 14 carbon atoms, from 2% to 10% potassium pyrophosphate, from 10% to 12% urea, from 5% to 10% ethyl alcohol, and a proportion of an organic acid selected from the class consisting of citric acid in a proportion of 1.5% to 4%, tartaric acid in a proportion of 1.5% to 3% and salicylic acid in a proportion of 2% to 4%, and from 34% to 70.5% water, the pH being adjusted to 5 to 7.

2. A clear liquid detergent composition which remains clear over the temperature range 40° F. to 80° F. and consisting essentially of, by weight, from 10% to 25% sodium dodecylbenzene sulphonate, from 1% to 5% fatty acid monoethanolamide in which the fatty acid moiety contains from 10 to 14 carbon atoms, from 2% to 10% potassium pyrophosphate, from 10% to 12% urea, from 5% to 10% ethyl alcohol, and a proportion of an organic acid selected from the class consisting of citric acid in a proportion of 1.5% to 4%, tartaric acid in a proportion of 1.5% to 3% and salicylic acid in a proportion of 2% to 4%, and a small quantity of an additive selected from the group consisting of perfume, colouring material, optical bleaching agent and anti-tarnishing agent, the balance being water to make 100% and the pH being adjusted to 5 to 7.

References Cited in the file of this patent

UNITED STATES PATENTS

2,477,383	Lewis	July 26, 1949
2,607,740	Vitale	Aug. 19, 1952
2,733,214	Vitale	Jan. 31, 1956
2,773,835	Anderson	Dec. 11, 1956

OTHER REFERENCES

Schwartz and Perry: Surface Active Agents, Interscience, Publishers, New York (1949), p. 235.
Trexler: "Phosphates," Soap and Sanitary Chemicals, July 1950, pp. 39-41 and 82.