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DETERGENT COMPOSITION

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1 Claim. (Cl. 252—106)

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This invention relates to a detergent sanitizer composition which will both cleanse and sanitize at the same time.

The new composition is particularly advantageous for use as an antiseptic detergent or detergent sanitizer in the dairy industry and other purposes, e. g., for hand-washing of milking machines and for use where antiseptic action as well as detergent action is desired.

The new detergent sanitizer composition is in the form of a free flowing powder and contains a quaternary ammonium compound, a non-ionic detergent, and compatible alkali salts in suitable proportions. The alkali salts particularly sodium carbonate and tetrasodium pyrophosphate are used in a finely powdered form. Varying amounts of inert salts or fillers, such as sodium sulfate, sodium chloride, etc. may also be included.

In making the new composition the quaternary ammonium compound and the non-ionic detergent are advantageously mixed together and heated to form a thin liquid which is then added slowly and gradually to the powdered alkali salts with thorough mixture so as to insure thorough distribution and so that the alkali salts will hold these compounds by absorption or otherwise so that, although the added compounds may be liquid, the final product is a free-flowing powder.

The composition is water-soluble and can advantageously be used in hard water where detergent, sanitizing and sequestering action is desired.

A composition which I have found particularly advantageous is the following, the parts being by weight:

45 parts sodium carbonate (Na_2CO_3)
45 parts TSPP
6.3 parts nona-ethylene glycol mono ester of soya bean fatty acids
3 parts Quartol Anhydrous (oleyl dimethyl ethyl ammonium bromide)

In general, the amounts of the composition to be used will be sufficient to give a dilute solution of e. g., 1% in water but stronger or more dilute solutions may be used.

Tests were made of the composition of the above formula, the tests being carried out by inoculating 5 c. c. of the 1% solution of the detergent sanitizer with 5 c. c. of a 24-hour culture of *E. coli* and subculturing, after 1, 2, 3, 5 and 10 minutes, into 10 c. c. of broth and then re-subculturing 3 loopfuls into 10 c. c. of broth and incubating at 37 degrees centigrade for 48 hours. The results obtained indicated that such a composition was effective even in one minute in killing *E. coli*. Tests were also carried out, under more stringent and practical conditions, using the same technique but adding 1, 2 and 3% milk to the 1% solution of the composition. The results obtained at room temperature, using a 1% solution against *E. coli*, were as follows:

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	Period of Exposure				
	1 Minute	2 Minutes	3 Minutes	5 Minutes	10 Minutes
Detergent Sanitizer	0	0	0	0	0
Detergent Sanitizer +1% milk	+	0	0	0	0
Detergent Sanitizer +2% milk	+	0	0	0	0
Detergent Sanitizer +3% milk	+	+	+	0	0

In the table + indicates growth and 0 indicates no growth. All of these results were obtained in triplicate.

Further tests were carried out at 40 and 50° C. with the following results:

	Period of Exposure				
	1 Minute	2 Minutes	3 Minutes	5 Minutes	10 Minutes
40° C.					
Detergent Sanitizer	0	0	0	0	0
Detergent Sanitizer +1% milk	+	0	0	0	0
Detergent Sanitizer +3% milk	+	0	0	0	0
50° C.					
Detergent Sanitizer	0	0	0	0	0
Detergent Sanitizer +1% milk	0	0	0	0	0
Detergent Sanitizer +3% milk	0	0	0	0	0

Tests were carried out at 40° C. using ½% solution of the composition with the following results:

	Period of Exposure				
	1 Minute	2 Minutes	3 Minutes	5 Minutes	10 Minutes
Detergent Sanitizer	0	0	0	0	0
Detergent Sanitizer+1% milk	+	0	0	0	0
Detergent Sanitizer+3% milk	+	+	+	0	0

In these tests it will be seen that the quaternary ammonium compound imparts a desirable germicidal activity to the composition and that this activity is not interfered with by the non-ionic detergent; while, from the standpoint of detergency, the non-ionic detergent imparts valuable detergent properties.

While I do not wish to limit myself by any theoretical explanation of the action of the composition, I have been led to believe that the non-ionic detergent neutralizes or overcomes any negative detergent action of the quaternary ammonium compound without interfering with the desirable antibacterial action of the quarternary ammonium compound with the result that the composition is a valuable detergent sanitizer, useful in solutions, e. g., of about 1%, where antibacterial action as well as detergent action is desired.

Solutions of the detergent sanitizer composition are alkaline but with a pH of less than 10, e. g., 9.7 The new composition, as above pointed out, is valuable for use in the dairy industry, e. g., when milking machines are washed by hand. It is also a valuable detergent sanitizer composition for the washing and sanitization of glasses, eating utensils, etc., particularly where the washing is by hand and where sanitizing as well as cleansing is desired, including use on textiles, such as linens and hosiery, etc.

The new composition, as above noted, is in the form of a free-flowing powder with the finely divided alkali salts combined with the quaternary ammonium compound and the non-ionic detergent in regulated proportions and with thorough admixture to give a resulting free-flowing composition. It is a valuable detergent composition, available for use as detergent, as well as detergent sanitizer.

I claim:

A detergent sanitizer composition in the form of a free-flowing powder consisting essentially of the following ingredients in the following parts by weight:

Sodium carbonate, 45 parts;
Tetra sodium pyrophosphate, 45 parts;
Nona-ethylene glycol mono ester of soya bean fatty acids, 6.3 parts; and
Oleyl dimethyl ethyl ammonium bromide, 3 parts.

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