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WASHING AND CLEANSING COMPOSITIONS

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The present invention relates to washing and cleansing compositions.

I have found that particularly efficient and valuable washing and cleansing compositions can be obtained by incorporating known washing agents of the class of sulphuric derivatives of aliphatic compounds containing at least 8 carbon atoms with water-soluble salts of meta-phosphoric acid.

The said sulphuric acid derivatives comprise true sulphonic acids and acid sulphuric esters of said aliphatic compounds, as well as water-soluble salts of said esters and acids. Consequently, whenever the term "sulphuric acid derivatives of aliphatic compounds" is hereinafter employed, it is intended to mean the free sulphonic acids and the acid sulphuric esters as well as the water-soluble salts thereof. The said water-soluble salts preferably are alkali salts, i. e. ammonium, alkali metal (Na, K, Li) and the salts derived from aliphatic amines, such as the alkylol amines, for example mono-, di- and triethanol amines.

The water-soluble salts of metaphosphoric acid comprise the same alkali constituents as the water-soluble salts of the aforesaid sulphonic acids and sulphuric esters.

Examples of sulphuric acid derivatives suitable for the purpose of the present invention are the alkali salts of cetyl sulphonic acid, hydroxyoctodecane sulphonic acid, sulphonic acids of lauric, palmitic and margaric acid, sulphonic acids of fatty acid mixtures obtainable by saponification of fatty oils and fats, such as coconut oil, palm-kernel oil, soya bean oil or cotton seed oil, alkali salts of oleic hydroxyethane sulphonic acid or N-oleic-N-methyl taurine and the like. The said sulphonic acids may be prepared, inter alia, according to the process described in the British specifications Nos. 343,899 and 341,053. The said sulphonic acids also comprise those derived from halogenated, more particularly chlorinated, fatty acids of the kind described. Suitable salts of sulphuric esters are more particularly those of aliphatic alcohols contaning at least 10 carbon atoms, such as decyl, dodecyl, tetradecyl, octodecyl and oleyl alcohols, which alcohols may also contain one or more chlorine atoms in their molecule. Particularly valuable compositions are obtained by incorporating the said salts of metaphosphoric acid with the sulphonated mixtures of alcohols obtainable by the liquid phase oxidation of paraffin wax according to Patent No. 1,908,376. The said sulphonic acids of aliphatic compounds containing at least 8 carbon atoms may also be substituted by polynuclear aromatic hydrocarbon radicles, in which case the sulpuhonic acid groups may be fixed to the aromatic nucleus, such as is the case for example with mono- or polyoctylnaphthalene sulphonic acids. Very valuable compositions may also be prepared from esters, amides and ester amides, obtainable by condensing a hydroxyalkyl amine with a higher aliphatic acid containing sulphuric acid groups, for example according to the British Patent No. 306,116, and from the sulphonated condensation products of hydroxylalkyl ethers with fatty acids containing at least 8 carbon atoms, which may be prepared according to the British Patent No. 364,104. The said sulphuric acid derivatives also comprise the sulphonated fatty acid compounds, containing chlorine, which may be obtained according to the British Patent No. 389,543, and the acid sulphuric esters of halogen derivatives of hydroxylated aliphatic hydrocarbons obtainable according to the British Patent No. 394,043.

The quantity of alkali salts of metaphosphoric acid contained in the compositions according to the present invention generally amounts to between about 10 and about 200 per cent of the weight of the aforesaid sulphuric acid derivatives, the preferred compositions containing about equal parts by weight of either components. The said components may be mixed with each other or added to the water in any sequence in suitable proportions, and in this manner washing preparations or washing liquors of high washing power are obtained. When washing textiles, especially in hard water, excellently washed goods are obtained which are distinguished by a specially soft touch. The compositions according to this invention are therefore especially suitable for the treatment of fabrics from or containing cotton and artificial silk fabrics, but may also be employed with advantage for the treatment of other textile materials. The said compositions may also be employed for washing articles of all other kinds, as for example furniture, floor coverings, or windows, and for washing animal hair.

Other additional substances may be added to the said preparations of washing liquors, as for example Glauber's salt, water-glass, substances having an oxidizing or reducing action, such as sodium perborate or sodium hydrosulphite, solvents, such as cyclohexanol, cyclohexanone, monoalkyl or monoaryl esters of glycols, such as cresyl or xylenyl ethers of ethylene glycol, or

chlorinated hydrocarbons, such as carbon tetrachloride, trichlorethylene and the like.

The following unexpectedly good results obtainable by washing with the said new compositions become evident by the following comparisons: Ladies' dress-cloth impregnated with 5 per cent by weight of olive oil is treated for 5 minutes at between 40° and 45° C. with 10 times its weight of a degreasing bath. The first bath contains per litre of water 0.75 gram of the sodium salt of tetradecyl alcohol acid sulphuric ester, the second bath contains the same quantity of a mixture of equal parts of tertiary sodium phosphate and the said sodium salt of the acid sulphuric ester of tetradecyl alcohol, and the third bath contains the same quantity of a mixture of equal parts of sodium metaphosphate and the said sodium salt of the acid sulphuric ester of tetradecyl alcohol. Whereas by the said treatment the first and second baths only remove 43.2 and 50.0 per cent, respectively, of the oil originally present on the cloth, the third bath removes 71.0 per cent of the oil. It is quite obvious that such a large increase of the degreasing effect is something quite unusual in the art.

The following examples will further illustrate the nature of this invention but the invention is not restricted to these examples.

Example 1

White body linen or household linen is boiled for an hour in a washing liquor containing in each litre of water of 15° hardness (German scale according to which 1° hardness means the equivalent of one part by weight of CaO in 100,000 parts of water) 1 gram of the sodium salt of oleic-N-methyl tauride (British specification No. 341,053), 2 grams of sodium carbonate and 2 grams of sodium metaphosphate. A pure white odourless linen is obtained.

Example 2

Artificial silk stockings from viscose, containing strains of mineral oil from wearing are washed in a washing liquor containing in each litre of water of 15° hardness (German scale according to which 1° hardness means the equivalent of one part by weight of CaO in 100,000 parts of water) 1 gram of the reaction product of dichlor-stearic acid and mono-ethanol amine sulphuric acid sodium salt, 0.5 gram of sodium meta-phosphate and 0.5 gram of sodium carbonate for half an hour at 60° C. while keeping the stockings in vigorous movement. The washed stockings are entirely free from stains and can be dyed without any trouble.

Example 3

Suint wool is washed at 50° C. in a washing liquor containing in each litre of water 1 gram of the sodium salt of the acid sulphuric ester of octodecyl alcohol, 2 grams of sodium carbonate and 1 gram of potassium meta-phosphate. An open, pure wool practically free from fat is obtained which may be spun without appreciable waste.

Example 4

Fabrics of wool, artificial silk or natural silk are washed while being kept carefully moving in a lukewarm washing liquor containing in each litre of water 2 grams of the mixture of the sodium salts of the acid sulphuric esters from the alcohols corresponding to the fatty acids of coconut oil, 0.5 gram of sodium carbonate and 0.5 gram of ammonium meta-phosphate. The washed fabrics are quite free from impurities and retain their original lustre and softness without injury to the shade of colour.

Example 5

Woolen piece goods, which contain considerable amounts of olive oil, olein, machine oil or the like oiling agent from spinning, are washed in washing machine with a washing liquor containing in each litre of water 2 grams of the sodium salt of the oleic ester of hydroxyethane sulphonic acid, obtainable for example according to the British specification No. 366,916, 1 gram of sodium carbonate and 1 gram of sodium metaphosphate. A complete removal of the spinning oil and the other impurities is effected without the goods being unfavourably influenced. The hardness of the washing water plays no part in the washing process.

Example 6

For the cleaning of metal and glass articles, floor-coverings and lacquered articles, a mixture of the following composition is suitable:—

40 parts by weight of the mixture of sodium salts of the acid sulphuric esters of the alcohols corresponding to the fatty acids contained in coconut or palm kernel oils,
10 parts by weight of sodium meta-phosphate and
50 parts by weight of Glauber's salt.

By dissolving this mixture in water, an excellent cleaning agent is obtained.

Example 7

Suint wool is washed at from 45° to 50° C. in 50 times its weight of a liquor containing 2 grams of the sodium salt of octyl naphthalene sulphonic acid and 0.25 gram of sodium meta-phosphate per litre of water. A pure wool free from fat is obtained.

What I claim is:—

1. A washing and cleansing preparation essentially consisting of a water soluble sulphuric derivative of an aliphatic compound containing at least 8 carbon atoms and having detergent and wetting properties and a water soluble salt of meta-phosphoric acid.

2. A washing and cleansing preparation essentially consisting of a water soluble sulphuric derivative of an aliphatic compound containing at least 8 carbon atoms and having detergent and wetting properties and between about 10 and about 200 per cent of said derivative, of a water soluble salt of meta-phosphoric acid.

3. A washing and cleansing preparation essentially consisting of an alkali metal salt of a water soluble sulphuric derivative of an aliphatic compound containing at least 8 carbon atoms and having detergent and wetting properties and an alkali metal salt of meta-phosphoric acid.

4. A washing and cleansing preparation essentially consisting of an alkali metal salt of a water soluble derivative of an aliphatic compound containing at least 8 carbon atoms and having detergent and wetting properties and between about 10 and about 200 per cent of said alkali metal salt, of an alkali salt of meta-phosphoric acid.

5. A washing and cleansing preparation essentially consisting of a sodium salt of a water soluble sulphuric derivative of an aliphatic compound containing at least 8 carbon atoms and having detergent and wetting properties and the sodium salt of meta-phosphoric acid.

6. A washing and cleansing preparation essentially consisting of a sodium salt of a water solu-

ble sulphuric derivative of an aliphatic compound containing at least 8 carbon atoms and having detergent and wetting properties and between about 10 and about 200 per cent of said sodium salt, of the sodium salt of meta-phosphoric acid.

7. A washing and cleansing preparation essentially consisting of a sodium salt of an acid sulphuric ester of an aliphatic alcohol containing at least 10 carbon atoms and the sodium salt of meta-phosphoric acid.

8. A washing and cleansing preparation essentially consisting of a sodium salt of an acid sulphuric ester of an aliphatic alcohol containing at least 10 carbon atoms and between about 10 and about 200 per cent of said sodium salt, of the sodium salt of meta-phosphoric acid.

9. A washing and cleansing preparation essentially consisting of a sodium salt of an acid sulphuric ester of a chlorinated aliphatic alcohol containing at least 10 carbon atoms and between about 10 and about 200 per cent of said sodium salt, of the sodium salt of meta-phosphoric acid.

10. A washing and cleansing preparation essentially consisting of a sodium salt of a sulfonated condensation product of an alkylol amine and a fatty acid containing at least 8 carbon atoms, and between about 10 and about 200 per cent of said sodium salt, of the sodium salt of meta-phosphoric acid.

11. A washing and cleansing preparation essentially consisting of a sodium salt of a sulfonated ester of an alkylol amine and a fatty acid containing at least 8 carbon atoms, and between about 10 and about 200 per cent of said sodium salt, of the sodium salt of meta-phosphoric acid.

12. A washing and cleansing preparation essentially consisting of a sodium salt of a sulfonated ester of an alkylol amine and a chlorinated fatty acid containing at least 8 carbon atoms, and between about 10 and about 200 per cent of said sodium salt, of the sodium salt of meta-phosphoric acid.

13. A washing and cleansing preparation essentially consisting of a sodium salt of a condensation product of oleic acid and an alkyl-sulfonic acid, and between about 10 and about 200 per cent of said sodium salt, of the sodium salt of meta-phosphoric acid.

14. A washing and cleansing preparation essentially consisting of the sodium salt of N-oleic-N-methyl tauride and between about 10 and about 200 per cent of said sodium salt, of the sodium salt of meta-phosphoric acid.

15. The process which comprises treating soiled materials with an aqueous bath of a washing and cleansing preparation essentially consisting of a water soluble sulphuric derivative of an aliphatic compound containing at least 8 carbon atoms and having detergent and wetting properties and a water soluble salt of meta-phosphoric acid.

16. A washing and cleansing preparation essentially consisting of a sodium salt of a sulphonated ester of an alkylol amine and a fatty acid containing at least 8 carbon atoms and sodium meta-phosphate.

17. A washing and cleansing preparation essentially consisting of the sodium salt of N-oleic-N-methyl tauride and sodium meta-phosphate.

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