

UNITED STATES PATENT OFFICE

2,335,194

CLEANSING PROCESS AND PRODUCT

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No Drawing. Application September 17, 1940, Serial No. 357,118. In Germany September 26, 1939

2 Claims. (Cl. 252-161)

The present invention relates to a cleansing process and product.

Water-soluble derivatives of high polyoses which contain hydrocarbon radicals bound in an ether-like manner and substituted by hydrophilic groups have no or only a very small washing action. If they are, however, used as addition to soap or synthetic, surface-active organic compounds advantages are obtained. With mixtures from water-soluble derivatives of high polyoses and equal or larger quantities of washing agents a cleansing effect may be obtained which is otherwise only arrived at by the use of higher concentrations of washing agents.

Whereas in such mixture, on the one hand, soap, that is to say, a washing agent hydrolyzing in aqueous solution and, on the other hand, synthetic organic washing agents, that is to say, washing agents which do not hydrolyze behave about equally, the behaviour of the said washing agents shows considerable differences when they are used in concentrations which are insufficient for washing and cleansing. Whereas the washing effect of small quantities of soap is improved only to an immaterial extent by the simultaneous use of water-soluble derivatives of high polyoses containing ether-like bound hydrocarbon radicals substituted by hydrophilic groups, the washing power of synthetic organic non-hydrolyzing washing agents is considerably enhanced by the use of the said products. It is, therefore, possible to prepare a washing agent which contains only small quantities of synthetic organic non-hydrolyzing washing agents in admixture with water-soluble derivatives of high polyoses containing ether-like bound hydrocarbon radicals substituted by hydrophilic groups. For instance, the mixture need contain only 10-30% of the washing agent. With such a mixture very good washing results are obtained even if only such a small quantity thereof is present in the washing liquor that the concentration of pure, non-hydrolyzing washing agent per se would not be sufficient for washing.

The water-soluble derivatives of high polyoses which are suitable for the present process are derived, for instance, from cellulose, starch, lichenin, xylan and other carbohydrates. There may be used derivatives which contain ether-like bound hydrocarbon radicals substituted by hydrophilic groups, for instance, hydroxyethylmethyl cellulose, hydroxyethyl starch, furthermore ether-like derivatives containing acid groups such as cellulose glycolic acid, starch glycolic acid, cellulose oxyethane sulfonic acid that

is to say compounds which are obtained by condensation of the alkali compounds of polyoses with halogen alkyl carboxylic acids or halogen alkyl sulfonic acids. These ether acids may be used in the form of their water-soluble salts, for instance, their alkali metal salts, the ammonium salts and the salts with organic nitrogen bases.

As washing agents there enter into question synthetic, organic compounds of surface activity which behave in water in a manner different from that of the alkali salts of higher fatty acids that is to say, which do not hydrolyze. In the first place there are mentioned anion-active washing agents, i. e., compounds in which the anion contains the surface-active group and electro-neutral compounds which are water-soluble by their contents of polyalkylene-oxy groups. As washing agents which do not hydrolyze there are suitable, for instance, fatty acid condensation products, for instance from oleic acid chloride and methyltaurine, oleic acid chloride and sodium hydroxyethane sulfonate, oleic acid chloride and sodium amino acetate or sarcosine or products of albumin cleavage, sulfuric acid esters of high molecular alcohols, sulfonation products of high-molecular hydrocarbons, reaction products of fatty alcohols and alkylphenols with alkylene oxydes, as well as the sulfuric esters of these oxalylation products, or the like.

To the said mixtures there may be added sodium carbonate, alkali silicates and other substances having an alkaline reaction, water-soluble phosphates and salts of phosphoric acids which are poorer in water than the ortho-phosphoric acid and of amino carboxylic acids which carry at the nitrogen atom more than one carboxyl group. Moreover, substances yielding oxygen such as hydrogen peroxide, sodium perborate, percarbonate, sodium and magnesium peroxide, alkali persulfates, alkali persulfates and the alkali perphosphates may be added.

The following examples illustrate the invention, the parts being by weight unless otherwise stated:

(1) Cotton fabric dirtied by means of street dust, animal fat and mineral oil is washed in permutite water near boiling temperature, with addition of 1 gram of anhydrous sodium carbonate per liter, with 0.5 gram of a mixture of 90 parts of cellulose sodium glycolate and 10 parts of the sulfuric acid ester of the condensation product of isotetradecylphenol and 5 mols of ethylene oxide. A clean-washed material is obtained, whereas 100 parts of sodium cellulose

glycolate without addition have no cleansing effect.

(2) Artificial silk staple fiber, dirtied as in Example 1, is washed in water of 15° of German hardness containing 2 grams of anhydrous sodium carbonate and 0.5 gram of sodium nitrilo triacetate with 0.5 gram of a mixture of 90 parts of sodium cellulose glycolate and 10 parts of the condensation product from isooctylphenol and 10 mols of ethylene oxide. Even at 65° C. a very good cleansing effect is obtained which considerably surpasses that of 100 parts of the cellulose derivative with addition of 0.5 gram of sodium nitrilo triacetate and 2 grams of sodium carbonate.

(3) A household washing agent from 2% of sodium sulfonate of high molecular paraffin hydrocarbons, 5% of sodium cellulose glycolate, 6% of sodium pyrophosphate, 15% of sodium nitrilotriacetate, 8% of sodium perborate, 32% of sodium trisilicate and 32% of sodium sulfate shows a very good subjecting effect on dirty household laundry goods when 8 grams thereof are used per liter of water of 15° of German hardness with addition of 2 grams of anhydrous sodium carbonate at 70° C.

(4) A household washing agent of the same composition as indicated in Example 3 but containing 5% of hydroxyethyl cellulose, yields at 95° C. in water of 15° of German hardness a good cleansing effect on table and kitchen linen.

(5) With the washing agent of Example 3 but containing instead of 5% of sodium cellulose glycolate 5% of sodium starch glycolate a dirty wool fabric is well washed at 40° C.

(6) A mixture of 75 parts of hydroxyethyl cellulose and 25 parts of the sodium salt of oleic acid methyl taurine yields an excellent cleansing agent for household purposes, for instance, for cleansing floors, vessels and window panes.

(7) A mixed fabric of cotton and artificial silk staple fiber dirtied by means of street dust, animal fat and mineral oil is well cleansed in de-hardened water of 95° C. containing 0.75 gram of sodium benzylcellulose glycolate and 0.25 gram of sulfuric ester of hydroxyethylated diisooheptylphenol without simultaneous use of sodium carbonate.

(8) A washing powder of valuable properties is obtained from 8% of benzylcellulose sodium glycolate, 2% of the sodium salt of sulfonic acids obtained by the action of chlorine and sulfur dioxide on high molecular paraffine hydrocarbons, 10% of calcined sodium carbonate, 20% of sodium

bicarbonate, 30% of water glass (38° Bé.) and 30% of sodium sulfate.

We claim:

1. A process for cleansing materials with a bath containing a non-hydrolyzing synthetic organic washing agent in an amount which per se would be insufficient to effect washing, said agent being selected from the group consisting of condensation products of oleic acid chloride and methyl taurine, oleic acid chloride and sodium hydroxyethane sulfonate, oleic acid chloride and sodium amino acetate, sulfuric acid esters of high molecular alcohols, sulfonation products of high molecular hydrocarbons, reaction products of fatty alcohols and alkylphenols with alkylene oxides and the sulfuric acid esters of these oxalkylation products, said bath further containing a water-soluble derivative of high polyoses selected from the class consisting of cellulose, starch, lichenin and xylan having ether-like bound hydrocarbon radicals substituted by hydrophilic groups, which comprises subjecting the materials to the action of a bath comprising an aqueous solution of a mixture of about 10-30 parts of the said synthetic organic washing agent and about 90-70 parts of said water-soluble derivative of high polyoses.

2. A detergent composition comprising a mixture of a non-hydrolyzing synthetic organic washing agent, said agent being selected from the group consisting of condensation products of oleic acid chloride and methyl taurine, oleic acid chloride and sodium hydroxyethane sulfonate, oleic acid chloride and sodium amino acetate, sulfuric acid esters of high molecular alcohols, sulfonation products of high-molecular hydrocarbons, reaction products of fatty alcohols and alkylphenols with alkylene oxides and the sulfuric acid esters of these oxalkylation products, and a water-soluble derivative of high polyoses selected from the class consisting of cellulose, starch, lichenin and xylan having ether-like bound hydrocarbon radicals substituted by hydrophilic groups, the proportions in the mixture being about 10-30 parts of the said synthetic organic washing agent to 90-70 parts of the said water-soluble derivative of high polyoses, said mixture being effective as a detergent even if only such a small quantity thereof is present in the washing bath that the concentration of the non-hydrolyzing washing agent per se would be insufficient for washing.

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