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MAURICE CRAIG TAYLOR, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO THE MATHIESON ALKALI WORKS, INC., OF NEW YORK, N. Y., A CORPORATION OF VIRGINIA

DETERGENT COMPOSITION

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This invention relates to improvements in saline detergent compositions. The invention provides improved detergent salt mixtures of special value in applications in which bacteriological cleanliness as well as apparent cleanliness is important. The improved detergent salt mixtures of the present invention are mixtures of a detergent alkali metal salt, such as alkali metal phosphates, borates, silicates, fluosilicates, carbonates, sulphates and fluorides, and a stable calcium compound of hypochlorous acid, such as calcium hypochlorite substantially free from calcium chloride, the mixture including but a minor proportion of the calcium compound of hypochlorous acid and consisting mainly of a detergent salt.

In the washing of dairy equipment such as bottles, cans and milking machines and in the washing of equipment used in the preparation of food and containers for food products, for example, bacteriological cleanliness is as important as apparent cleanliness. The conventional detergent salt mixtures are effective to secure apparent cleanliness but not to secure bacteriological cleanliness. However, if the water solution in which such detergent salt mixtures are used includes but a small proportion such as one-twentieth part of an alkali metal hypochlorite, sodium hypochlorite, for example, the solution becomes effective to secure cleanliness in both respects. A proportion of hypochlorite sufficient to provide from 0.01% to 0.3% of available chlorine in the solution is sufficient for ordinary purposes. Sodium hypochlorite, however, is unstable to an extent such that its direct addition to such solutions of detergent salt mixtures is difficult if not impractical. Moreover, the addition of an unstable compound of hypochlorous acid to a detergent salt mixture in the small proportion required is unsatisfactory because of the consequent uncertainty as to the effectiveness of the detergent salt mixture when used to secure bacteriological cleanliness as well as apparent cleanliness.

When dissolved, the improved detergent salt mixtures of the present invention provide a solution containing the required small proportion of, for example, sodium hypochlorite, yet the dry detergent salt mixture, in which form it is kept until used, is free from unstable components.

The invention will be further illustrated by the following example: 3 to 8 pounds of a stable calcium hypochlorite product containing from 60—65% calcium hypochlorite, 35—30% sodium chloride and about 5% calcium chlorate, calcium carbonate and calcium chloride, is mixed with 95 pounds of trisodium phosphate monohydrate to form a detergent salt mixture embodying the present invention. In general it is satisfactory to incorporate in the detergent salt mixture an amount of the stable calcium hypochlorite product such that the resulting mixture contains about one-twentieth part of calcium hypochlorite. This proportion, of course, is subject to variation.

The calcium hypochlorite products described in United States Patents Nos. 1,481,039, 1,481,040, 1,713,650, 1,713,654, 1,713,668, 1,713,669, 1716,014, 1,718,284 to 1,718,287, both inclusive, and in applications Serial Nos. 300,148 and 308,885 are especially advantageous in the improved detergent salt mixtures of the present invention because of their stability and solubility.

As will be apparent, the detergent alkali metal salt should be substantially dry, that is, free from water available to effect the reaction between the alkali metal salt and the calcium compound of hypochlorous acid, before the minor proportion of the calcium compound of hypochlorous acid is incorporated in the mixture. If necessary, the detergent salt is dried before the calcium hypochlorite component is incorporated.

The detergent alkali metal salts used in the detergent salt mixtures of this invention are salts of acids forming insoluble calcium salts. Thus, when the improved detergent salt mixture of this invention is dissolved in water, sodium hypochlorite, for example, is formed in solution and the calcium salt corresponding to the detergent salt of the mixture is precipitated. Since the calcium hypochlorite, for example, reacting with the detergent salt to produce sodium hypochlorite, for example,

n the solution is present in the mixture in ut minor proportion only a correspondingly mall proportion of the detergent salt is conumed in this reaction leaving the solution ainly a solution of the detergent salt alhough containing sodium hypochlorite, for xample, effective to secure bacteriological leanliness. The insoluble calcium salt preipitated is similarly present in but such small roportion that it can usually be disregarded. This precipitated calcium salt may, however, e separated from the solution of the deterent salt mixture by decantation or filtration f necessary or desirable.

I claim:

1. A detergent salt mixture forming in water a solution containing a water soluble letergent and a bactericide, the detergent beng at least equal in amount to the amount of the bactericide, said mixture comprising a water soluble detergent alkali metal salt of an acid forming an insoluble calcium salt and a minor proportion, with respect to the alkali metal salt, of a stable calcium hypochloride.

2. A detergent salt mixture comprising trisodium phosphate and a minor proportion of a stable calcium hypochlorite.

3. A detergent salt mixture comprising an alkali metal phosphate and a minor proportion of a stable calcium hypochlorite.

4. A detergent salt mixture forming in water a solution containing a water soluble detergent and a bactericide, the detergent being at least equal in amount to the amount of the bactericide, said mixture comprising an alkali metal carbonate and a minor proportion, with respect to the alkali metal carbonate, of a stable calcium hypochlorite.

5. A detergent salt mixture forming in water a solution containing a water soluble detergent and a bactericide, the detergent being at least equal in amount to the amount of the bactericide, said mixture comprising an alkali metal silicate and a minor proportion, with respect to the alkali metal silicate, of a stable calcium hypochlorite.

6. A detergent salt mixture forming in water a solution containing a water soluble detergent and a bactericide, the detergent being at least equal in amount to the amount of the bactercide, said mixture comprising an alkali metal phosphate and a minor proportion, with respect to the alkali metal phosphate, of a stable calcium hypochlorite.

In testimony whereof I affix my signature.

MAURICE CRAIG TAYLOR.