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METHOD OF INCREASING THE SOLUBILITY OF HALOGENATED PHENOLS IN SOAP SOLUTIONS

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5 Claims. (Cl. 167—31)

The invention concerns a method of increasing the solubility of halogenated phenols in soap solutions.

Soap solutions containing halogenated alkyl- or aryl or aralkyl phenols and an addition of water-miscible organic solvent are known as valuable disinfecting and preserving agents. It is required of these solutions that at winter temperatures, for example +4° C. they shall not undergo separation, that is to say that the temperature of separation must lie below +4° C. so that the products remain homogeneous during storing and transport. For a considerable time it has been attempted to attain this effect by a suitable addition of a water-miscible organic solvent or by correspondingly high soap concentrations. An increase of the soap content is limited upon physical and bactericidal grounds, since if care is not taken the viscosity of the solution and its bactericidal action will be unsatisfactorily influenced.

It has already been suggested to increase the antiseptic action of phenols by addition of common salt. However, in this way the separating point is raised and thus an effect produced which is wholly contrary to that desired according to the present invention.

It has now been found that the solubility of halogenated phenols in soap solutions can be increased by addition of more than about 1% by weight of trivalent PO_4 ions calculated upon the whole solution. Preferably, the phosphate addition according to the present invention is between 3 and 4% by weight of trivalent PO_4 ions.

The invention further includes soap solutions which comprise as disinfecting agents the known halogenated phenols which, if desired, are substituted by alkyl, aryl, aralkyl or other radicals, and a content of tertiary phosphate amounting to at least 1% by weight of trivalent PO_4 ions.

The technical effect attained according to the present invention is surprising since it is known that the addition of salts to such a system normally brings about a raising of the temperature of separation, that is to say, a "salting out" and thus a contrary action.

Example 1

A solution which contains 10% of castor-oil soap, 5% of chlor-cresol and 5% of chlor-xylenol as well as 8% of ethyl alcohol with varying portions of tertiary sodium potassium phosphate showed the following series of breaking or separation temperatures:

Alcohol	PO_4 ions	Breaking point in degrees centigrade
Per cent	*Per cent*	*Degrees*
8	0	17
8	0.3	19
8	0.6	17
8	0.9	15
8	1.0	11
8	2.4	7
8	3.6	−2
14	0	−2

From these results it will be seen that to obtain a separation temperature of −2° C. without phosphate addition under the existing conditions it is necessary to add 14% of alcohol to the soap solution. The same effect however is obtained with only 8% alcohol when the trivalent PO_4 ions concentration is increased to 3.6%.

Example 2

A solution containing 20% castor-oil soap, 6% chlor-cresol, 6% chlor-xylenol and 6% alcohol has a separating point of 22°. By an addition, according to the present invention, of 3.6% of trivalent PO_4 ions the separating point is reduced to −4° C. If it is desired to obtain the same effect by an addition of an organic solvent, for example ethyl alcohol then it is necessary to add practically double the quantity of alcohols, namely 11%.

The reduction of the separating temperature by addition of phosphate ions according to the present invention, can amount with suitable proportions to from 15 to 20° C. By an addition of trivalent PO_4 ions of from 3 to 4% by weight it is possible with given contents of soap and solvent to bring considerably more phenol into solution without the separating temperature altering. There is, therefore, available the possibility of reducing the content of organic solvent and also in the same way of effecting an economy

in soap, whereby a cheapening is obtained and whereby the disinfecting action is improved.

I claim:

1. The method of increasing the solubility at low temperatures of halogenated phenols in aqueous soap solutions containing an operative quantity of alcohol not exceeding eight per cent, which phenols are normally relatively insoluble at low temperatures, which includes the step of incorporating in the solution trivalent phosphate ion in a proportion between 1% and 4% by weight.

2. As a new article of manufacture, an aqueous solution comprising soap alcohol and halogenated phenol, which phenol is normally relatively insoluble at low temperatures, having a low separating temperature and comprising a content of between 1% and 4% of trivalent phosphate ion.

3. The method of increasing the solubility at low temperatures of halogenated phenols in aqueous soap solutions containing an operative quantity of alcohol not exceeding eight percent, which phenols are normally relatively insoluble at low temperatures, which includes the step of incorporating in the solution at least about 1% of trivalent phosphate ion.

4. As a new article of manufacture, an aqueous solution comprising soap and halogenated phenol, which phenol is normally relatively insoluble at low temperatures, having a low separating temperature and containing an operative quantity of alcohol not exceeding eight per cent and at least about 1% of trivalent phosphate ion.

5. As a new article of manufacture, an aqueous solution comprising soap alcohol and halogenated phenol, which phenol is normally relatively insoluble at low temperatures, having a low separating temperature and comprising a content of at least about 1% of trivalent phosphate ion.

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