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PENTACHLOROPHENOL PRESERVATIVE

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ABSTRACT OF THE DISCLOSURE

A preservative which is liquid at 0° C. and which contains a predominant amount of pentachlorophenol esters of fatty acids comprising, in addition to pentachlorophenol ester mixtures of fatty acids having from 6 to 12 carbon atoms, esters which are liquid at 0° C. consisting essentially of lower chlorinated or non-chlorinated phenol or alkylphenol esters of fatty acids having from 1 to 12 carbon atoms.

This invention relates to preservatives which are liquid at 0° C. and consist predominantly of pentachlorophenol esters of fatty acids, characterized in that they contain, in addition to pentachlorophenol ester mixtures of fatty acids of 6–12, predominantly 8–10 carbon atoms, of a practically solid consistency at room temperature, optionally in a mixture with up to 30% by weight of pentachlorophenol, esters of lower-chlorinated or non-chlorinated phenol or alkyl phenol with fatty acids of the chain length C_1–C_{12}, which esters are liquid at 0° C.

German Pat. 1,105,835 protects the utilization of a mixture of at least 70% of a pentachlorophenol ester, preferably of a fatty acid mixture of 6–12 carbon atoms and up to 30% by weight, preferably 15–25% by weight, of pentachlorophenol in the oily form, suitably in an aqueous emulsion, as an agent for textile preservation.

The preserving effect of these mixtures is excellent. In practice, a disadvantage was found in the pentachlorophenol esters in that the originally liquid esters tend to crystallize out and, in part, become solid after a shorter or longer storage period, especially at lower temperatures.

Thus, the necessity resulted to melt the preservatives at higher temperatures in order to convert them into the liquid phase required for processing. An addition of pentachlorophenol to the esters improves the stability of the liquid phase; however, a sufficiently prolonged stabilization of the liquid consistency cannot be obtained in all cases by this means.

It has now been discovered that preservatives containing predominantly pentachlorophenol esters of fatty acids exhibit a liquid consistency even at 0° C. and maintain this consistency also during a longer storage period, if they contain—in addition to pentachlorophenol ester mixtures of fatty acids of the chain length C_6–C_{12}, predominantly C_8–C_{10}, which can also be mixed with up to 30% by weight of pentachlorophenol—esters liquid at 0° C. of lower-chlorinated or non-chlorinated phenol or alkyl phenol with fatty acids, preferably the mono-, di-, tri-, or tetrachlorophenol or -cresol esters of fatty acids of the chain length C_1–C_9, or the phenol or alkyl phenol esters of fatty acids of the chain length C_1–C_{12}, preferably in a ratio of 60:40 of the pentachlorophenol esters to the esters of the lower-chlorinated or non-chlorinated phenol or alkyl phenol.

The preservatives of this invention thus do not exhibit any more the above-described disadvantages of the pentachlorophenol esters employed heretofore.

The lower-chlorinated the phenol component of the ester, and the shorter the carbon chain of the fatty acid

esterified with phenol or cresol, the better the shelf life of the mixture with pentachlorophenol ester.

Preferably, the ratio of the pentachlorophenol esters to the esters of the lower-chlorinated or non-chlorinated phenol or alkyl phenol is 60:40. However, the content of pentachlorophenol ester in the mixtures can be the higher, the lower-chlorinated the phenol or alkyl phenol and/or the lower the number of carbon atoms in the chain of the esterified fatty acid of the additional component.

The preservatives of this invention are liquid at 0° C. By suitably selecting the additional component, the crystallization temperature can be even below 0° C. It was also found that the mixtures, if a gel-like structure is assumed by these mixtures when being stored for a longer period of time at below 0° C., recover their liquid consistency after standing for a short time at room temperature; this is a property which additionally distinguishes the mixtures over the pentachlorophenol esters and the mixtures thereof with pentachlorophenol employed heretofore.

For example, the following mixtures of this invention exhibit a liquid consistency at 0° C.:

(1)

60% by weight of pentachlorophenol ester (fatty acid mixture C_6–C_{12}),
40% by weight of the tetrachlorophenol ester of caproic acid.

(2)

60% by weight of pentachlorophenol ester (fatty acid mixture C_6–C_{12}),
40% by weight of the phenol ester of caproic acid.

(3)

40% by weight of pentachlorophenol ester (fatty acid mixture C_6–C_{12}),
20% by weight of pentachlorophenol,
40% by weight of the tetrachlorophenol ester of caprylic acid.

(4)

40% by weight of pentachlorophenol ester (fatty acid mixture C_6–C_{12}),
20% by weight of pentachlorophenol,
40% by weight of the tetrachlorophenol ester of caproic acid.

(5)

50% by weight of pentachlorophenol ester (fatty acid mixture C_6–C_{12}),
10% by weight of pentachlorophenol,
40% by weight of the tetrachlorophenol ester of caproic acid.

The fact that, in the above examples, a reduction of the carbon chain of the fatty acid, as well as a reduction in the chlorine content of the phenol result in a higher stabilization of the liquid phase was confirmed by experiments.

We claim:

1. A preservative which is liquid at 0° C. consisting essentially of up to about 30% by weight of pentachlorophenol, pentachlorophenol esters of mixed fatty acids having from 6 to 12 carbon atoms, and other esters which are liquid at 0° C. consisting essentially of lower chlorinated or non-chlorinated phenol or alkylphenol esters of fatty acids having from 1 to 12 carbon atoms; the lower chlorinated phenols containing up to 4 chloro groups and the ratio of said pentachlorophenol esters to said other esters varying from 1:1 to 1.5:1.

2. A preservative in accordance with claim 1, wherein the ratio of the pentachlorophenol esters to the esters of

the lower-chlorinated or non-chlorinated phenols or alkylphenols is 60:40 by weight.

3. A preservative in accordance with claim 1, wherein said preservative contains a predominant amount of pentachlorophenol esters of mixed fatty acids having from 8 to 10 carbon atoms.

4. A preservative in accordance with claim 1, wherein the lower chlorinated phenol or alkylphenol esters comprise mono-, di-, tri- or tetrachlorophenol or alkylphenol esters of fatty acids having from 1 to 9 carbon atoms.

5. A preservative in accordance with claim 1, wherein the non-chlorinated phenol or alkylphenol esters comprise phenol or alkylphenol esters of fatty acids having from 1 to 12 carbon atoms.

6. A preservative in accordance with claim 1, wherein the alkylphenol is cresol.

7. A preservative which is liquid at 0° C. consisting essentially of about 60% by weight of pentachlorophenol esters of mixed fatty acids having from 6 to 12 carbon atoms and about 40% by weight of the tetrachlorophenol or the phenol ester of caproic acid.

8. A preservative which is liquid at 0° C. consisting essentially of about 40% by weight of pentachlorophenol esters of mixed fatty acids having from 6 to 12 carbon atoms, about 20% by weight of pentachlorophenol and about 40% by weight of the tetrachlorophenol ester of caprylic or caproic acid.

9. A preservative which is liquid at 0° C. consisting essentially of about 50% by weight of pentachlorophenol esters of mixed fatty acids having from 6 to 12 carbon atoms, about 10% by weight of pentachlorophenol and about 40% by weight of the tetrachlorophenol ester of caproic acid.

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