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MOTHPROOFING AGENTS

Othmar Drapal, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, a corporation of Germany

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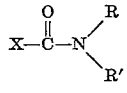
8 Claims. (Cl. 167—37)

The present invention relates to and has as its objects mothproofing compositions and a process for making textiles resistant to the attack of moths and more generally keratin textile pests.

Most of the known mothproofing agents, for example those based on triphenylmethane derivatives or derivatives of aryl ureas, dissolve only at boiling temperature and require comparatively large quantities of water. The dissolving process takes, therefore, much time and energy, thus being cumbersome for the intended use of the products.

It has now been found that compounds of the general formula



wherein X is a hydrogen atom, a low molecular weight alkyl radical, an aryl-O—, aryl-S— or aryl-NH— group, and R and R' stand for a hydrogen atom or an alkyl radical, are excellently suited to improve substantially or expedite the solubility of the aforesaid active substances. Examples of such solubility-improving compounds are phenylurethanes, tolylurethane, xylylurethane, and the corresponding thiourethanes, phenylurea, phenyl-methylurea, tolylurea, xylylurea, and the corresponding thioureas, benzamide, toluamide, N-methylbenzamide, N,N-dimethylbenzamide, acetamide, N-methylacetamide, formamide or dimethylformamide. Those compounds, however, are given by way of illustration only without limiting this invention in any way.

Particularly effective of this class are the simple aromatic carboxylic acid amides.

As stated above the most suitable mothproofing agents which may be combined with the afore mentioned compounds are those ones derived from triphenylmethane or from arylureas as they are known e.g. under the trademarks "Eulan" or "Mitin." Compounds of that type are known e.g. from U.S. Patents No. 1,707,181, No. 2,376,930, and No. 2,719,852.

The solubility-improving compounds are applied for example by adding the agent in question in quantities of 10 to 50 percent to the initial active substance or mixtures of active substances, and dissolving them in a little water. This clear concentrated solution can then be diluted with water in any proportion.

Mothproofing of textiles proceeds by known methods e.g. by floating wool or woollen textiles in a 1 to 10% aqueous solution while heating near to the boiling point. The time which is required for giving full protection depends widely upon the known mothproofing agent which has been used together with the inventive solubilisation compounds. Normally heating for about one hour should be sufficient for effective mothproofing.

The following examples are given to illustrate the invention.

Example 1

1 part of the methylene ether of 2,2'-dihydroxy-3,5,3',5',4''-pentachloro-triphenylmethane-2'' - sulphonic acid is thoroughly mixed with 1 part of monophenylurea.

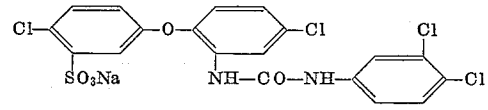
This mixture dissolves clear after pouring over it only

4 to 5 times its amount of boiling water, and can be mixed with water in any proportion.

The solutions are stable to ions and temperature and keep well and are employed in quantities of 2 to 3 percent for treatment of animal fibres such as wool to protect them permanently from damage caused by keratin pests.

Example 2

1 part of the urea derivative from 4,4'-dichloro-2-amino-diphenyl ether and 3,4-dichloroaniline of the following formula



is intimately mixed with 1 part of benzamide.

This mixture also dissolves after pouring on it 5 times its amount of boiling water to give a clear solution which can be mixed with water in any proportion.

The solutions are unaffected by the addition of salt or acid and remain stable upon boiling. They are suitable for the protection of textiles against keratin pests.

Example 3

1 part of 2,2'-dihydroxy - 3,5,3',5',4'' - pentachlorotriphenylmethane-2''-sulphonic acid is intimately mixed with 1 part of benzamide. The solution of this mixture exhibits the same properties as described in the preceding examples and is used for protection against keratin pests.

Example 4

1 part of 2,2'-dihydroxy-3,5,3',5'-tetrachlorotriphenylmethane- 2''-sulphonic acid is mixed intimately with 1 part of thiourea. This mixture is dissolved in 5 parts of boiling water. The mixture is boiled for further 2 to 5 minutes and then may be diluted with water in any proportion. Woolen yarn which is brought into a 5% hot aqueous solution of the above mixture for 1 hour gets permanently protected against keratin pests such as moths.

Example 5

1 part of 2,2'-diethoxy-3,5,3',5',4''-pentachlorotriphenylmethane-2''-sulphonic acid is intimately mixed with 1 part of dimethylformamide. A solution of this mixture exhibits the same properties as those described in the foregoing examples. If this mixture is diluted to a concentration of 5% and used in an amount of 3% active substance referred to the amount of textiles to be protected then the latter ones get full protection after boiling them for 1 hour with said solution in a neutral or weak acidic medium.

Example 6

1 part of 2,2'-diallylhydroxy-3,5,3',5',4''-pentachlorotriphenylmethane-2''-sulphonic acid is intimately mixed with 1 part of acetic acid amide. The solution of this mixture shows the same effectiveness as that one of the foregoing example and may also successfully be used against moths and other keratin pests.

I claim:

1. A dry composition comprising a compound selected from the group consisting of triphenylmethanes and diphenyl ethers, said triphenylmethanes and said diphenyl ethers being mothproofing agents, and a member selected from the group consisting of benzamide and phenylurea.

2. An aqueous composition comprising water, a compound selected from the group consisting of triphenylmethanes and diphenyl ethers, said triphenylmethanes and said diphenyl ethers being mothproofing agents, and a

member selected from the group consisting of benzamine and phenylurea.

3. A dry composition comprising a triphenylmethane mothproofing agent and phenylurea.

4. A dry composition comprising a diphenyl ether mothproofing agent and benzamide.

5. A dry composition comprising a triphenylmethane mothproofing agent and benzamide.

6. An aqueous composition comprising water, a triphenylmethane mothproofing agent and phenylurea.

7. An aqueous composition comprising water, a diphenyl ether mothproofing agent and benzamide.

8. An aqueous composition comprising water, a triphenylmethane mothproofing agent and benzamide.

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