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TREATMENT OF TEXTILES AND OTHER FIBROUS MATERIALS

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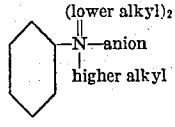
4 Claims. (Cl. 8—142.5)

This invention relates to the use of new quaternary nitrogen compounds as assistants for the treatment of textiles. These compounds have valuable properties for many purposes in the textile industry.

For example, the new quaternary compounds form valuable wetting, dispersing and emulsifying agents, or agents for improving the fastness to water of direct dyed cellulose textiles; in particular they are softening agents for natural and regenerated cellulose, or stripping agents for naphthol AS-dyeings. The new compounds may also be used for protecting wool, feathers, hair, leather and other materials against moths and other pests. Some of the new compounds possess also distinct bactericidal and fungicidal properties.

The valuable new compounds are produced by a process which comprises converting an aromatic monoamine, containing at the nitrogen atom a high molecular, saturated or unsaturated, aliphatic radical with more than eight carbon atoms, into the quaternary ammonium compound by means of a usual low molecular alkylating agent. For this purpose esters, capable of reaction, of aliphatic low molecular alcohols, such as dialkyl sulphates or alkyl halides, are particularly suitable.

The new compounds have the following formula:



lower alkyl meaning methyl and ethyl and higher alkyl representing an aliphatic radical with more than 8 carbon atoms, anion meaning a member selected from the group of the anions of mineral and benzene sulphonic acids.

Similar quaternary compounds have already become known, which on the one hand contain at the nitrogen atom a high molecular aliphatic hydrocarbon radical which may be substituted and/or interrupted by other atoms, but not acylated, on the other hand at least one aliphatically linked organic radical, containing one or more double bonds. For their production it is suggested that the usual methods lead to the result, in particular that this may occur by the action of suitable esters, which contain the particular high molecular radical, on tertiary amines which at the nitrogen are substituted by an aliphatically linked radical containing double bonds.

When this method is applied to tertiary aromatic amines, for example to diethyl aniline by allowing the bromide of the technical dodecyl alcohol to act thereon, no conversion into the quaternary compound takes place. From this it must be concluded that quaternary ammonium compounds, containing a high molecular and a directly combined aromatic radical, are not capable of being produced. The more surprising is the fact that another definite sequence of the alkylating leads to the result that the same aromatic amines, which at the nitrogen are substituted by a high molecular alkyl radical, can be converted by the usual alkylation easily and quantitatively into the corresponding quaternary compounds.

The following examples illustrate the invention, the parts being by weight, where nothing other is said:

Example 1

52 parts of dodecyl aniline, produced by the usual processes, are dissolved in 200 parts by volume of chlorobenzene and then 25.5 parts of anhydrous soda are added. At 100° C. 30 parts of dimethyl sulphate are added in drops and the whole is stirred for 12 hours. Thereafter filtration from the insoluble inorganic salts takes place, then another 30 parts of dimethyl sulphate are added and stirring is continued for 8 hours at 90–95° C. The chlorobenzene is then blown off with steam and the remaining clear aqueous solution is evaporated to dryness. The new quaternary compound is obtained as a wax-like bright yellow paste.

If instead of the dodecyl aniline there is used a corresponding tertiary base, as for example ethyl dodecyl aniline, produced in the usual manner from dodecyl bromide and ethyl aniline, there is finally obtained a quaternary compound with quite similar properties.

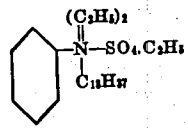
Instead of the technical dodecyl alcohol, also called lorol alcohol, any other suitable alcohol mixture, obtained from natural fats, waxes, resins and the like by reduction may be used for the production of alkyl aryl amines, so for instance the alcohols obtained from hydrogenated palm nut fatty acid, cocoanut oil fatty acid, soyabean fatty acid, hydrogenated cod liver oil fatty acid, from fatty acids of resins or aliphatic compounds, such as naphthenic acid, carboxylic acids of camphor and fenchone.

Example 2

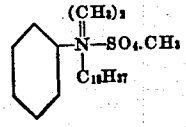
69 parts of octodecyl aniline are dissolved in

200 parts by volume of a suitable solvent such as chlorobenzene, 25.5 parts of anhydrous soda and 37 parts of diethyl sulphate are then added and stirred for 12 hours at 90–95° C. The solvent is blown off with steam and the new base, ethyl-octodecyl-aniline, is taken up in ether, dried and distilled. The conversion into a water soluble form with an ester of a low molecular aliphatic alcohol, for example diethyl sulphate, is effected as indicated in Example 1. The final product is obtained in the form of a viscous liquid.

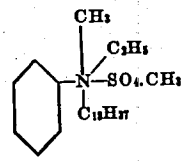
The obtained product has the following formula:



If using dimethylsulphate in this example instead of diethylsulphate, a product may be obtained which has the following formula:



By the use of dimethyl- and diethylsulfate, the obtained product will have the following formula:



Instead of dimethyl and diethyl sulphate used in Examples 1 and 2 other alkylating agents may be employed such as alkyl halides (methyl chloride, ethyl bromide or iodide) or arylsulphonic acid esters (benzene or toluene sulphonic acid methyl, ethyl, propyl, butyl, amyl esters and so on).

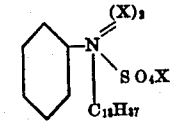
Example for treating natural or regenerated cellulose

A solution is prepared from 0.5 g. of dimethyl octadecyl phenyl ammonium methosulphate in 1.000 g. of distilled water, to which are added 2.4 g. of calcinated sodium sulphate and with this solution there is treated for 10 minutes at a temperature of 40–45° C. a skein of viscose artificial silk of a weight of 40 g. (proportion of the heating bath 1:25). Thereupon by squeezing and centrifuging the excess of liquid is removed and without rinsing drying takes place at a moderate heat. The cold artificial silk has a very soft feel.

Instead of the quaternary compound used in the above example any other of the compounds mentioned in the general description may be employed.

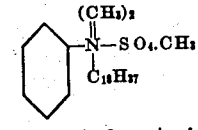
What we claim is:

1. A process for imparting a soft feel to regenerated cellulose, comprising wetting same with an aqueous solution of a compound of the formula



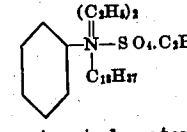
wherein X means one of the group consisting of CH_3 and C_2H_5 and drying the so treated material.

2. A process for imparting a soft feel to regenerated cellulose, comprising wetting same with an aqueous solution of dimethyl octadecyl-phenyl-ammonium-metho-sulphate of the formula



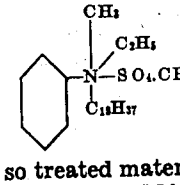
and drying the so treated material.

3. A process for imparting a soft feel to regenerated cellulose, comprising wetting same with an aqueous solution of diethyl-octadecyl-phenyl-ammonium-etho-sulphate of the formula



and drying the so treated material.

4. A process for imparting a soft feel to regenerated cellulose, comprising wetting same with an aqueous solution of methylethyl-octadecyl-phenyl-ammonium-metho-sulphate of the formula



and drying the so treated material.

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