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ALIEN PROPERTY CUSTODIAN

PROCESS FOR PREPARING CAPILLARY ACTIVE SUBSTANCES

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This invention relates to capillary active substances and to a process for their preparation. More particularly it relates to a process for preparing capillary active substances from organic sulfohalogenides having at least one lipophile group in the molecule and ammonia or ammonium salts respectively in the presence of alkaline reacting agents to form sulfimides.

It is an object of this invention to provide the soap, laundry, textile, leather, fur, paper and the like industries with capillary active substances which are readily convertible into water soluble soap like salts and have excellent foaming, washing and cleaning properties.

In the co-pending application of Winfrid Hentrich and Erik Schirm filed August 3, 1939, Ser. No. 288,130 there is described a process for preparing capillary active substances constituted according to the general formula



wherein at least one of the two substituents R and R' stands for an organic radical containing at least one lipophile group, which may be interrupted by hetero atoms or hetero atom groups, whereas the other radical may be any hydrocarbon radical eventually interrupted by hetero atoms or hetero atom groups, and Kat denotes any desirable kation which is capable of forming water soluble salts. The process consists in condensing sulfonic acid halogenides of the general formula $R-SO_2-Hal$ with sulfonic acid amides of the general formula $R'-SO_2-NH_2$ or its suitable metal derivatives respectively and in converting the obtained condensation products with inorganic or organic bases into water soluble salts.

In accordance with the present invention it has been found that the aforementioned process may be simplified considerably, if in the above noted formula R is equal to R'. In those cases it is not necessary to prepare the sulfonic acid amides $R-SO_2-NH_2$ separately and then to condense with the sulfonic acid halogenides $R-SO_2-Hal$, but the sulfonic acid halogenides may be reacted simply upon ammonia or any ammonium salt immediately in the presence of alkaline reacting agents, whereat two mols of sulfonic acid halogenides are applied for one mol of ammonia or the equivalent amount of an ammonium salt respectively.

Organic sulfonic acid halogenides which may be used as initial materials are e. g. 4-sec.butylbenzenesulfochloride, 4-sec.hexylbenzenesulfochloride, 4-sec.octylbenzenesulfochloride, 4-sec.dodecylbenzenesulfochloride, 4-sec.hexadecylbenzenesulfochloride, diisobutylaphtalenesulfochloride,

further sulfohalogenides, the hydrocarbon radicals of which are interrupted by hetero atoms such as oxygen, nitrogen or sulfur and by corresponding hetero atom groups e. g. 4-capryloylaminobenzenesulfochloride, 4-caprinoylamino-benzene sulfochloride, a mixture of 4-aminobenzenesulfochlorides acylated on the amino group by paraffin carboxylic acid chlorides with 7-9 carbon atoms.

According to the instant process these sulfonic acid halogenides are reacted with ammonia or ammonium salts such as ammonium acetate, formiate, carbonate, ammonium chloride and the like in the presence of alkaline reacting agents such as inorganic or organic bases or alkaline reacting salts respectively e. g. soda, soda lye, sodium acetate, calcium carbonate, pyridine and the like and if necessary in the presence of an organic solvent such as acetone, butanol, benzene, toluene or preferably in the presence of water.

Example

To a suspension consisting of 5.5 parts by weight of ammonium chloride, 100 parts by weight of water, 85 parts by weight of acetone and 60 parts by weight of 4-sec.octylbenzenesulfochloride (obtained by treating sec.octylbenzene with chlorosulfonic acid at 0-5° C) 10 n-soda lye is added drop by drop while stirring at 10-20° C in such a manner, that the mixture reacts constantly alkaline to phenolphthaleine. When the conversion begins to cease the mixture is gradually warmed up to 60° whereat the acetone distills off. The temperature of the mixture is further raised to 90° whereupon soda lye is added till the mixture finally reacts weakly alkaline. After cooling down the layer at the bottom of the liquid is dissolved in nearly 500 parts of water whereupon hydrochloric acid is added till Kongo acid reaction occurs. An oil is separated which is dissolved in ether and washed neutral with water. After drying and evaporating the ether one obtains the 4,4'-di-sec.octylbenzene-disulfimide as a highly viscous dark colored oil in an output of nearly 90% of the theory. By a treatment with soda lye the compound is converted into the corresponding sodium salt, which is soluble in water and gives strongly foaming aqueous solutions.

Instead of the 4-sec.octylbenzenesulfochloride one may use the 4-sec.dodecylbenzenesulfochloride and obtains with ammonia a condensation product the alkali salt of which is likewise water soluble and possesses a soap-like character.

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