

# UNITED STATES PATENT OFFICE

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## CONDENSATION PRODUCTS OF HIGH MOLECULAR ALBUMINOUS SPLIT PRODUCTS

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7 Claims. (Cl. 260—121)

This invention relates to compounds having wetting and cleansing properties rendering them excellently adapted for use in the treatment of textile materials.

5 In accordance with a process already known to the art, "albuminous split products" are condensed with higher molecular fatty acids or higher molecular organic sulfonic acids, or with their derivatives, to produce products suitable for use principally in the finishing of various fibrous materials. Such process is disclosed in the Sommer Patent No. 2,015,912 wherein there is disclosed "treating high molecular split off products of albumin particularly those of the lysalbinic acid and protalbinic acid type, with higher saturated and unsaturated fatty acid chlorides".

15 The object of the present invention is to produce products which are in some respects similar to those of the said patent but which possess superior properties as will hereinafter be described.

20 In accordance with the present invention, condensation products having unusually effective properties are obtained from the higher molecular split products of the nature of those described in the above mentioned patent by condensing such products under alkaline conditions in conventional manner with certain compounds containing at least one higher molecular aliphatic group in the molecule, a halogen atom in a readily reactive condition and at least one other modifying radical as will hereinafter be disclosed.

25 According to one embodiment of the present invention, the compounds used possess the general formula:



30 wherein X stands for a  $-\text{OR}_3$  group or a  $-\text{N}(\text{R}_3\text{R}_4)$  group and at least one of the groups  $\text{R}_1$  to  $\text{R}_4$  stands for a higher molecular aliphatic group and the remaining three groups stand for hydrogen or a hydrocarbon group.

35 Such compounds are e. g. the esters and the amides of  $\alpha$ -halogen fatty acids wherein it is essential that in the molecule—either in the acid component or in the alcohol component or in the amido-group—there be a higher molecular aliphatic alkyl-residue. As components for the reaction with the albuminous products there may be considered e. g. chloro acetic-acid lauryl-ester,  $\alpha$ -bromo propionic-acid-cetyl-ester,  $\alpha$ -bromo-lauric acid-oleyl-ester, di-chloro carbonic acid-ester of 1,18-stearylene-glycol, chloro acetic acid-  
40 N-laurylamide, chlor-acetic acid-(N-cetyl-

phenyl)-amide,  $\alpha$ -bromo-lauric acid-oleyl-amide, dilauryl-carbamide-chloride and others.

45 Among the albuminous split-products adapted to form the valuable high molecular fatlike products capable of being condensed with the said organic compounds which in the alkyl-residue may also contain any substituents such as halogen, hydroxyl, free or substituted amino-groups, there are the di- and polypeptides to be mentioned such as e. g. the leucyl-leucine, silk-fibroine and others, derivates of albumin such as lysalbinic acid, separation-products of size, casein, gelatine, leather, horn etc., which products may be described collectively as the water soluble higher molecular products of simple hydrolysis of albuminous materials containing amino groups with a replaceable hydrogen atom. As to the condensation one proceeds in the following way: The albuminous split-products are dissolved or emulsified in slightly alkaline aqueous media, whereupon one adds the halogen compound under vigorous stirring, taking care that a slightly alkaline reaction is always prevailing. The reaction temperatures may be between  $-20$  and  $+150^\circ$  but generally the reaction takes place at  $5-35^\circ$ , whereby it is sometimes advantageous to let the temperature subsequently rise to about  $70-80^\circ$ . The reaction takes place by the union of the amino group of the albuminous derivative with the halogenated atom of the molecule containing the higher molecular alkyl group, thereby liberating halogen halide.

50 Furthermore the organic carbonic acid halogenides of the general formula halogen-CO-R<sup>5</sup>-Y-R<sup>6</sup> are likewise suitable as condensable compounds for the condensation with higher molecular albuminous split-products. In the said formula, R<sup>5</sup> means an alkylene- or arylene residue and R<sup>6</sup> any hydrocarbon residue, with the understanding that one of same contains no less than 8 C-atoms in an aliphatic chain. The hydrocarbon residues may furthermore contain some substituents such as halogen, amino, hydroxyl. The symbol Y stands for the elements O or S respectively or the atom-groups SO<sub>2</sub>, NR<sup>7</sup>, CONR<sup>7</sup>, NR<sup>7</sup>/CO or NR<sup>7</sup>/SO<sub>2</sub>, wherein R<sup>7</sup> means hydrogen or any hydrocarbon residue. Such compounds are e. g. the ethers and thio-ethers of carbonic acid halogenides, alkyl-sulfo-carbonic-acid halogenides, alkyl-amino-carbonic-acid halogenides, substituted carbon-amide-carbonic-acid halogenides, acetyl-amino-carbonic-acid halogenides and N-alkylsulfamide-carbonic-acid halogenides, wherein it is, however, necessary that at least one higher molecular aliphatic hydrocarbon residue  
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