

ALIEN PROPERTY CUSTODIAN

PROCESS TO MANUFACTURE LIGHT-SENSITIVE, PHOTOGRAPHICAL MATERIAL

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Subject of this invention is a novel photographic material, consisting of a partly soapened ether of the polyvinyl alcohol or to this homologous or homogeneous polymerisates or condensates as bearer colloid for an organic, for themselves alone or in composition with the bearer substance light sensitive salts.

In the German Reich patent No. 451,113, the employment of the protective colloid effect of polyvinyle alcohol, consequently, in total of the etherised polyvynyle ether was already proposed, that is to say, in order to obtain stable dispersed systems of metals or such like material. Polyvinyle alcohol must in view of its solubility in water not be used as bearer colloid for light sensitive substances, which has, to be sure, to be subjected to most watery treatment baths. In contrast to this, the partly soapened polyvinyle ethers and such like materials cannot be dissolved in water; they may, however, be welled up in it, similar to gelatine and thus, according to the chosen degree of soapening, be attained with the desired and correctly to be determined bearer capacities.

If one, for instance, will use as bearer colloid disetherised polyvinyle acetate for halogeneous silver, this will show no bearing capacity at all and, within a short time, the partly in a solution dispersed share of halogeneous silver will disengage itself into a bottom sediment and the clearly over it standing solution of polyvinyle acetate. If, however, one subjects the polyvinyle acetate to a part soapening, with the increasing free hydroxyle groups also the bearing capacity of the solution will independently from its degree of dilution increase and attains a superior bearing capacity for the brought in halogeneous silver already with a polyvynal acetate, which shows approximately 8-12 per cent less acetyle groups, as will correspond to the full saturation of acetyle groups.

The polyvinyle ethers show, consequently, a behaviour very similar to the cellulose ethers. It is known, therefore, that acetyle cellulose, as an entirely acetylised product, has also no bearing capacity whatever for halogeneous silver and it could be attained in the last period of time, to impart to it this protective colloid effect by a part disetherification.

In contrast to the cellulose ethers, the products of polymerisation under consideration enjoy the great advantage that they may as purely synthetical products be always manufactured homogeneously and are capable of being built up in the desired manner, whereas with the cellulose

ethers, there is from the very beginning a done natural product under consideration. This natural product is in its structure apt to be influenced only to a very small extent and in the strict meaning of the word only in the unfavourable sense, that is to say, by means of a dispolymerisation, whereas, through an artificial product or products, the degree of dispolymerisation may, from the very beginning, be chosen to that extent, which one desires, whereby one may dominate all capacities and tune them correctly for the desired aim.

The process under consideration does not only refer to polyvinyle ether, but there will result, as a matter of course, since, in consequence of the comprehension basing on the invention also in themselves, for halogeneous silver emulsions not suitable colloids may by means of imparting polar groups not be changed into bearer colloids, that also all homogeneous and analogous polyvinyle ethers, that is to say, all those by means of polymerisation or condensation attained colloid bodies, to which polar groups will be imparted by the help of a soapening treatment, will fall into the frame of the process under consideration.

The soapening part treatment necessary in order to attain a bearer colloid effect, may be attained differently, for instance, in a usual manner by means of acids, over heated steam, and so forth, but advantageously also with calculated alcali quantities, for instance, according to the following manner:

Sample I of execution

A polyvinyle acetate of a degree of polymerisation, as will be shown by the trade-mark Vinnapass 100 B of Wacker, Munich, Bavaria, will 10 percentically be dissolved in acetone, of this 500 cubiccentimetres will, under a strong stirring up, be mixed with 50 cubiccentimetres of water, to this are added 60 cubiccentimetres of a solution of caustic lye, of this neutralised one cubiccentimetre of 0.2 grammes of acetic acid, and then, furthermore, be added 50 cubiccentimetres of water.

Partly neutralised ethers of those polyvinyle alcohols and such like may be dissolved in very many organic means of dissolution through adding a small quantity of water, and will yield, when poured upon any pads, such as glass, paper, film, but also textures, wood, napped metals, and so forth, quickly drying, well adhering and structurelessly transparent layers, which may, like

gelatine, be picture like tanned by means of chromates, i. e. chromic acid.

Halogeneous silver emulsions may, for example, be manufactured in the following manner:

Sample II of execution

To 500 cubiccentimetres of, according to example I, manufactured neutralised solution 24 cubiccentimetres of bromine potash solution will be added, which contains 46 grammes of bromine potash dissolved in 100 cubiccentimetres of water, as well as 100 cubiccentimetres of acetone, then under a vivid stirring up, 23 cubiccentimetres of a silver nitrate solution, to which will slowly be added a concentration of 65 grammes of silver nitrate in 100 cubiccentimetres of water, whereupon still 200 cubiccentimetres of acetone will be added. The transforming salts may in the usual manner be removed by washing, dialysing, out-freezing, and so forth, and then the emulsion will be ripened in the usual way.

Emulsions may also be produced, with which the halogeneous silver will be manufactured by means of a to the loading of the bearer colloid opposite loading of particles, and thus be united with the bearer colloid to a light sensitive, constant aggregate, as such had been described in previous claims, for instance, in the following manner:

Sample III of execution

To 500 cubiccentimetres of the, according to example I, manufactured neutralised solution, 7 cubiccentimetres of concentrated nitric acid of a specific weight of 1.4 will, under stirring up, be added, the 26 cubiccentimetres of silver nitrate solution of the equal concentration, as described under II, 100 cubiccentimetres of ace-

tone, and then 25 cubiccentimetres of the above mentioned bromine potash solution, thinned with 20 cubiccentimetres of water, and 100 cubiccentimetres of acetone, which will slowly flowingly be added.

If one uses stronger soapened products, very rich halogeneous silver emulsions, as they will be desired for many purposes, may be produced, for instance, two weight parts of halogeneous silver upon one part of bearer colloid.

In the present invention described halogeneous silver emulsions are equally manifold to be employed, as the thus far known halogeneous silver gelatine emulsions, will for instance, when using tanned developers be tanned on the silver spots, so that the well relieves or wash out relieves may be attained in a similar manner, as such are known of the halogeneous silver gelatine layers. Some difference is here existing in the solubility; whereas the gelatine layers, which are soluble in warm water, will yield out wash relieves, consequently, also by aid of warm water, water containing organic means of solution will be wanted to attain out wash relieves with polyvinyl ether and the like, since they will dissolved themselves in untanned state in this end, thus loose this solubility in it on the tanned picture spot.

Halogeneous silver emulsions, according to the present process, show in contrast to gelatine emulsions many advantages, when working them out to photographed material, as well as, when using them. The emulsion presents a sort of light sensitive varnish, which quickly dries up, and may, consequently, simply and comfortably be applied to any pad whatever. The material is mechanically of very great resisting power and permits, therefore, a comfortable working it up.

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