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METHOD FOR PREPARING NON-INFLAMMABLE PAINTS, LAC-VARNISHES, LACQUERS, COATINGS AND THE LIKE

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This invention relates to a method for preparing non-inflammable paints, lac-varnishes, lacquers, coatings and the like, and also to the products obtained according to the method of my invention.

There have been proposed several methods for making paints, lacquers and the like in order to give them fire-resisting properties consisting in adding silicates, pyrolytic decomposing salts, such as ammonia-phosphates and the like.

I have found now that there is a better and more simple method for giving fire-resisting properties to all types of painting, lacquers, varnishes, coatings and the like.

According to my invention I add hygroscopic salts, such as chlorides of metals, such as Ca, Al, Mg and the like. I also may use mixtures of several hygroscopical salts as follows from the examples given in this specification. It has appeared that it is possible oil-paints and the like as well as nitro-cellulose-paints, -lacquers, to prepare according to my invention so that same are non-flammable and fire-resisting without undesirable effects on the other properties of the same.

Several paints, such as oil-paints, contain emulsifiers in order to hold the pigments divided in the fluid medium. These emulsifiers may also disperse the hygroscopic salts. If the emulsifiers in the paints to be treated are insufficient to bring the hygroscopic salts in a finely divided state, emulsifiers may be added together with the salts. It is not important in what manner the salts are added, but it is necessary that the salts are dispersed in the paints as well as possible. In the case that oil-paints are used a concentrated solution of the hygroscopic salts may be stirred into the paint. The salts may be used in a watery solution. It is possible that the good properties of paints and lacquers are lost if water or watery solutions are added. In that case the hygroscopic salts may formerly be dissolved in solvents, such as alcohol, actene and the like. I have found that it may be advantageous to use a solution of the salts in alcohol as the solvent will evaporate after the paints have been rubbed out. Furthermore it has appeared that the salts are better dispersed in using an alcoholic solution. In the case that the paint or varnish contains a too small quantity of emulsifiers, glairs, glues, resins and the like may be added whether alone or together with the hygroscopic salts to the paints to be treated. As appears from the following examples the amounts of the hygroscopic salts to be added may be varied dependent on the composition of the paints. In particular I have found that the best results may be obtained with the chlorides of magnesium or calcium, alone or mixed together. It was unexpected that it was possible to use hygroscopic salts in paints or the like as the man skilled in the art would suspect that the hygroscopic properties would lead to a moisty surface. However, I have found that these drawbacks need not to occur and that a good paint, lacquer and the like may be made, giving a dry surface. Of course, the more hygroscopic salts are added to a paint, the more the paint will have hygroscopic properties and the more it will be possible that moisture of the air will be attracted by the surface of the paint after being rubbed out. In order to overcome the possibility of the surface of the paint or the varnish becoming moisty in any case I can add "indifferent" salts, such as carbonates, as calcium-carbonates.

I am aware that it is very difficult to give a correct explanation of the effect of the "indifferent" salts, but I suppose that the "indifferent" salts absorb the moisture attracted by the hygroscopic salts. It has appeared advantageous to use a pyrolitic decomposing salt, as "indifferent" salt, whereby the fire-extinguishing properties of the pyrolitic salts may help to make the treated paint non-inflammable and/or fire-resisting. Besides the chlorides of calcium and magnesium, as mentioned above, I may use the chlorides and sulphates of alluminium, ammonnium, chromium, iron and/or manganese, alone or mixed together. In order to illustrate my invention the following examples are given, viz:

Example 1

A paint for coating aircraft-wings having the following composition:

	Parts
Nitro-cellulose (10 parts dry to 4,1 part solvent)	141
Aceton	15
Benzene	50
Ethyl-alcohol	20
Ethyl-acetate	15

is divided in portions of 50 grams, of course each portion being very inflammable.

(*a*) To 50 grams of the above mentioned paint is added 12 ccm of a solution of 120 grams NH_4Cl and 380 ccm water. After this mixture has been rubbed out it will appear that same is not inflammable as the chloride used is not hygroscopic.

(*b*) To 50 grams of the above mentioned paint is added 12 ccm of a solution of 100 grams $(NH_4)_2HPO_4$ in 200 ccm water. Though a known pyrolitic decomposing salt has been used the paint

obtained according to this example is not fire-resisting.

(*c*) To 50 grams of the mixture of example 1 is added 12 ccm of a solution of 200 grams $CaCl_2$ in 100 ccm methyl-alcohol. This mixture is non-inflammable as a hygroscopic salt has been used.

(*d*) In order to show the effect of the adding of an "indifferent" salt, to 50 grams of the paint according to example 1 is added 12 ccm of a solution of 200 grams $CaCl_2$ in 100 ccm methyl-alcohol and 3 grams $CaCO_3$. In comparing example *d* with *c* after the paints have been rubbed out it will be seen that the surface of the paint according to *d* will rest absolutely dry whereas the surface of the paint c becomes easier moisty, dut to the fact that the mixture according to *c* does not contain a carbonate as an "indifferent" salt.

(*e*) To 50 grams of the paint according to example 1 is added 12 ccm of a solution of 200 grams $CaCl_2$ in 100 ccm methyl-alcohol and 3 ccm formaline. This mixture has good non-inflammable properties, but it will appear that due to the fact that formaline is added, the chloride has been better dispersed in the mixture.

(*f*) To 50 grams of the paint according to example 1 is added 12 ccm of a solution of 200 grams $MgCl_2$ in 200 ccm methyl-alcohol. This mixture has about the same non-inflammable and fire-resisting properties as the mixture according to *c*.

(*g*) To 50 grams of the paint according to example 1 is added 12 ccm of a solution of 200 grams $MgCl_2$ with 200 ccm methyl-alcohol and 3 grams $CaCO_3$. This mixture has about the same properties as that according to *d*.

(*h*) To 50 grams of the paint of example 1 is added 12 ccm of a solution of 200 grams $MgCl_2$ in 200 ccm methyl-alcohol, together with 3 grams $CaCO_3$ and 3 ccm formaline. This mixture has about the same properties as that according to *e*.

Example 2

A common oil-paint consisting of linseed-oil, quick drying-oil, zinc-white, a siccative and a red coloured pigment, is used. As described in example 1 to portions of 50 grams are added 12 ccm of the solutions called under *a* to *h*. The resulting mixtures have about the same properties as to fire-resistancy as the mixtures specified under *a* to *h*.

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