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HECTOGRAPH BLANKET HAVING A COPY MASS COMPRISING A SILICATE

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1 Claim. (Cl. 117—35.6)

The invention relates to hectograph blankets, and has for its object the provision of a hectograph blanket having a copy mass of improved mechanical resistance and low sensitivity to hydrothermal factors.

Another object is to provide a hectograph blanket adapted for use in roll form.

Another object is the provision of a blanket having a silicate tanned copy mass which is securely adhered to its backing.

Other objects and advantages will become apparent as the following detailed description progresses.

In accordance with this invention, an alkali metal silicate is incorporated in a gelatinous copy mass and the mass bonded to a backing, preferably by means of an acidic type bonding agent.

Of the various tanning agents used for imparting to duplication compositions the requisite hydrothermal resistance, silicates occupy a peculiar position. A silicate may be used in relatively much larger amounts in hectograph compositions than other tanning agents. Their tanning properties are governed by the influence of other ingredients to a high degree, and it is generally difficult to cause silicate tanned masses to adhere to backing materials.

However, silicate tanned compositions have properties more constant than those of any other type of tanned glue or gelatin in regard to the influence of water. Thus, silicate tanned compositions may have very nearly the same softening point at a high humidity as at a low humidity, which gives them an exceptionally wide range of tolerance to conditioning.

I have further discovered that certain hectograph copy masses tanned with silicate compositions can be brought to bond readily by using acidic type bonding agents.

To carry out my invention, I prepare hectograph compositions comprising a glue or gelatin type protein substance, about five to fifteen times the amount of this protein substance of a hydrophilic plasticizer such as glycerin, diglyceryl, glycols, carbohydrates non-crystallizing in the compositions in question, and the like. However, from the practical standpoint, I found that either glycerin or diglyceryl should be present as the major plasticizer in order to obtain the full benefits of the invention. I further employ as the tanning agent an alkali silicate solution of the standard commercial type in an amount between one-hundredth and one-third of the amount of protein present, the exact preferred amount depending upon the characteristics of the particular glue or gelatin employed and also upon the characteristics desired in the final compositions.

I further employ a carbohydrate ingredient such as, for example, an invert sugar preparation known to the trade as "Nulocrystal," corn syrup, molasses, or the like. This ingredient appears to be highly advantageous to the composition since without the carbohydrate present, great difficulty is encountered in obtaining adhesion between the duplication mass and the backing and also because the most desirable tanning characteristics of the silicate are not fully brought out unless a carbohydrate substance of this type is present.

The range of the carbohydrate type ingredient may vary widely but preferably is between one per cent and thirty per cent of the total composition.

The invention is further illustrated by the following examples:

Example I

	Parts by weight
Gelatin (220 bloom)	50
Water	100
Glycerin	500
"Nulocrystal"	50
Sodium silicate	10

The gelatin was allowed to swell in the water at room temperature for about one hour. It was then warmed to a temperature of 55° C. and admixed with the other ingredients which had been pre-heated to the same temperature. The sodium silicate was dissolved in an equal volume of water before being added to the mix. The composition thus prepared was applied in the melted state to a flexible backing material which had been provided with a coating of ten per cent of naphthenic acid and two per cent of phthalic anhydride in a nitrocellulose lacquer. The hectograph rolls thus produced were allowed to age for about three weeks and were then tested and found satisfactory in every regard.

Example II

	Parts by weight
Gelatin (220 bloom)	50
Water	100
Glycerin	500
Corn syrup	100
Sodium silicate	5

The rolls were made according to the procedure described in Example I, and were tested with the same favorable results.

Example III

	Parts by weight
Glue (160 bloom)	50
Water	75
Glycerin	350
Molasses	25
Sodium silicate	20

The rolls were made according to the procedure described in Example I and were tested with the same favorable results.

Example IV

	Parts by weight
Gelatin (220 bloom)	50
Water	80
Glycerin	300
Black strap molasses	25
Diglyceryl	25
Ethylene glycol	20
Sorbitol	15
Mannitol	10
Mineral oil	5
Starch	2
Titanium dioxide	1
Locust bean gum	1
Karaya gum	3
Sodium silicate	10
Ethylene glycol mono stearate	2
Petrolatum	1
Sodium lactate	2

The glue, gelatin, starch and locust bean gum were allowed to swell in the water for one hour at room temperature. This mixture was then heated to 55° C. and was admixed to the other ingredients which had been pre-heated to the same temperature. The composition was then applied to a flexible backing material which had been previously coated with linseed oil which had been allowed to dry to a tenacious yet somewhat tacky set. The hectograph films thus prepared were allowed to age for one month and were then tested and found satisfactory.

These examples have been given by way of illustration and should not be construed in any sense of limitation since it is obvious that wide variations can be made in the ingredients without departing from the spirit or scope of the invention.

I claim:

A hectograph blanket having a gelatinous copy mass comprising gelatin, glycerine, an alkali metal silicate, and an invert sugar, the silicate being present in from one-hundredth to one-third the amount by weight of gelatin, and the glycerine being present in from five to fifteen times the weight of gelatin.

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