United States Patent Office 3,404,029 Patented Oct. 1, 1968

3,404,029

TRANSPARENTIZED DRAFTING PAPER

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No Drawing. Filed Jan. 27, 1965, Ser. No. 428,570
3 Claims. (Cl. 117—155)

ABSTRACT OF THE DISCLOSURE

A transparentized drafting or tracing sheet comprising a paper sheet impregnated with a blend of sucrose acetate isobutyrate or sucrose diacetate hexaisobutyrate and poly-α-methylsytrene.

This invention relates to a novel tracing paper and more particularly, it relates to a sheet of paper stock impregnated with a composition which acts to transparentize the sheet.

An acceptable tracing paper must have a high degree of transparentness, good color retention on aging or heating (no yellowing) and resistance to the effects of ultraviolet light. It must also have the ability to accept pencil erasure after extended aging, and, of course, it must be able to accept pencil or ink marking without spreading of the ink or fracturing. In addition, the paper must be hard and durable but still be flexible without fracturing on flexing.

Attempts to produce tracing paper sheets embodying the above properties by impregnation have encountered one or more of several problems: either the impregnating composition has incompletely penetrated the paper resulting in surface tackiness or at least part of the impregnating composition migrated or exuded from the paper and resulted in a paper which lacked flexibility or had poor ink and pencil acceptance.

We have now discovered a novel impregnated tracing paper which has all of the required properties set forth above and in addition has the impregnating composition completely penetrated therein, displays no evidence of exudation of the impregnating composition and has excellent flexibility and pencil and ink acceptance.

Our novel tracing paper comprises a paper sheet impregnated with a blend of sucrose acetate isobutyrate and poly-α-methylstyrene. The paper sheet is normally opaque. It is preferably uncoated prior to impregnation. Best results are achieved using a 100% rag based paper sheet.

It further appears that best results have been achieved using a sucrose acetate isobutyrate which is predominantly sucrose dicacetate hexaisobutyrate.

The poly-α-methylstyrene is preferably a solid at room temperature and has a molecular weight of from 500 to 1200.

Preferably from 1 to 10 parts of the sucrose acetate isobutyrate and most preferably from 1 to 2 parts of the sucrose acetate isobutyrate are used for each part of the poly-α-methylstyrene. It should be noted that in the specification and claims, all proportions are by weight unless otherwise specified.

A web of paper is impregnated by dissolving the blend of the sucrose acetate isobutyrate and the poly-α-methylstyrene in a volatile organic solvent, preferably an aromatic hydrocarbon such as toluene, xylene or benzene. The solution preferably has a solids content of from 10 to 40%. The web is then passed through the solution for a short period of time e.g., in the order of less than 1 second and removed. The excess solution remaining on the surface of the web is removed. This may be done in any conventional manner e.g., squeezing between two rollers, or by a squeegee. Next, depending on the extent of the transparentness desired, the web is either heated with warm air, in the order of about 200° F. for a couple of seconds which further removes more solution reducing the transparentness or if substantially undiminished transparentness is desired, the web is rolled up and permitted to age at ambient temperatures for a period of time, ranging from 3 or 4 hours to 1 month before completing the drying of the web.

The following example will better illustrate the practice of this invention.

EXAMPLE 1

A web of paper, 100% rag based 60 lb. weight is passed through a solution of 20 parts of sucrose acetate isobutyrate (primarily sucrose diacetate hexaisobutyrate with minor amounts of sucrose triacetate pentaisobutyrate, averaging 2.3 acetyl and 5.7 isobutyryl groups per sucrose molecule) and 20 parts of linear poly-α-methylstyrene having an average molecular weight of about 720 dissolved in 60 parts of toluene. The excess solution is wiped off by a squeegee and the saturated web is rolled up and stored at room temperature for about 3 days. The web is then unrolled and cut into sheets of desired size.

The resulting sheet has excellent transparentness and is well impregnated by the blend. The extent of the impregnation or penetration may be determined by the level of transparentness of the sheet. A high degree of transparentness would indicate that the dissolved components have penetrated into the interstices of the fiber configuration in the paper and have replaced the air voids which normally provide the paper with its opacity. The sheet displays no loss of transparentness even after 72 hours at 220° F. The sheet also has excellent pencil and ink acceptance and can be easily erased without being damaged. In addition, the sheet is both tough and flexible and shows no evidence of whitening after a 180° crease. Further there is no evidence of discoloration after 24 hours of fadeometer exposure.

EXAMPLE 2

Example 1 is repeated using the same ingredients, proportions and conditions except that in place of the sucrose acetate isobutyrate, there is used a sucrose acetate isobutyrate having a molecular weight 850. The results are substantially the same as in Example 1.

EXAMPLE 3

Example 1 is repeated using the same ingredients, proportions and conditions except that in place of the sucrose acetate isobutyrate, there is used a sucrose acetate isobutyrate having a molecular weight of 1100. The results are substantially the same as in Example 1.

EXAMPLE 4

Example 1 is repeated using the same ingredients, proportions and conditions except that 26.7 parts of sucrose acetate isobutyrate and 13.3 parts of the poly-α-methylstyrene are used. The resulting sheet has the same properties outlined in Example 1.

EXAMPLE 5

Example 1 is repeated using the same ingredients, proportions and conditions except that 13.3 parts of sucrose acetate isobutyrate and 26.7 parts of the poly-α-methylstyrene are used. The resulting sheet has the same properties outlined in Example 1.

While there have been described what is at present considered to be the preferred embodiments of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is, therefore,

aimed to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A transparent tracing sheet comprising a paper sheet impregnated with a blend of from 1 to 10 parts by weight of sucrose acetate isobutyrate per part by weight of a poly-α-methylstyrene having a molecular weight between 500 and 1200.

2. The tracing sheet of claim 1 wherein said sheet is made of 100% rag based paper.

3. A transparent tracing sheet comprising a paper sheet impregnated with a blend of from 1 to 10 parts by weight of sucrose diacetate hexaisobutyrate per part by weight of poly-α-methylstyrene having a molecular weight between 500 and 1200.

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