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CIGARETTE PAPER

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The invention relates to cigarette manufacture and more particularly to a process of treating the cigarette paper, whereby the same is rendered water-resistant without impairing the appearance and smoking qualities of the cigarette.

The porosity of the ordinary cigarette paper almost universally used in the manufacture of cigarettes is accompanied by unusually high water absorbency, which is an undesired quality, since immediate disintegration of the paper occurs when moisture such as a drop of rain comes in contact with it, or when the tip of the cigarette becomes saturated with saliva. It is a common occurrence during smoking to have the cigarette tip disintegrate, allowing the paper to adhere to the lips and the individual particles of tobacco to become loosened and lodge in the mouth. These inconveniences have been partly overcome by the provision of special tips on the cigarette, such as bark, cork, straw, and similar materials, but with these expedients the cost of manufacture increases because of the special tipping operation required, also the remaining portion of the cigarette is unprotected from wet fingers, rain drops, and other disintegrating moisture conditions. Cigarettes, transported in localities of unusual high humidity, have been damaged by the tobacco becoming excessively moist and staining the paper wrapper. Expedients such as coating cigarette paper with resinous compositions, cellulose derivative films, or wax-like sheaths, have been proposed. In most such cases the appearance, odor, taste, or burning rate have been adversely influenced by the agent used notwithstanding claims to the contrary.

This invention has as an object the provision of a simplified process for the manufacture of a new and improved type of cigarette paper wherein no special methods of treatment, such as drying under controlled conditions of temperature and humidity, need be resorted to. Another object is the provision of a composition which when applied to a cigarette paper affords an extraordinary water-resistant surface. A further object of this invention is the provision of a waterproof cigarette paper, that will not readily disintegrate and at the same time will not be adversely affected as to its appearance, porosity, taste, odor, or combustibility.

The present invention is based on the discovery of a method of treating cigarette paper with a simple and inexpensive composition by which desirable water-resistant characteristics are imparted to the paper without impairing the inherent porosity, odor, taste or burning rate of the paper.

I am also aware that it has been proposed to impregnate cigarettes and cigarette paper with a composition containing a cellulose derivative and a wax. I make no claim in this application to such a process, but intend to restrict the present invention to a process or article involving the impregnation of the fibers only of a paper with a thin dispersion of a wax and an oil whereby the interstices between the fibers are not substantially bridged.

In contradistinction to methods formerly disclosed for providing water-resistant properties for cigarette papers, such as are developed through the application of resinous materials under carefully controlled conditions of temperature and humidity whereby "blooming" effects are obtained as described in U. S. Patent #1,909,924 or by the application of waxes and cellulose derivative compositions to give films more or less continuous in nature, the present invention affords superior properties through the application of an inexpensive composition under ordinary operating conditions, in such a manner as to avoid "blooming" effects or the formation of a continuous sheath-like film, while maintaining the original porous nature of the paper and permitting proper "breathing" of the paper during smoking of the cigarette.

The following example illustrates one embodiment of the invention. Ordinary cigarette paper is immersed in a solution consisting of 2 parts by weight of petrolatum, which is a naphthenic base type mineral oil with a specific gravity of 0.8870 to 0.8900 at 20°/20° C., 4 parts of "Cerese" wax, and 94 parts of hexane warmed to a temperature of 100 to 105° F., passed through rubber squeeze-rolls to expel any excess material, and dried at a temperature of 100 to 120° F., for about ½ minute. Drying at ordinary room temperatures, however, is not precluded. "Cerese" wax is a high melting paraffin.

The procedure including the application of the above solution and the subsequent drying requires only from 1 to 2 minutes. Although immersion is preferable, it is to be understood that this invention may be operated by other methods such as brushing, spraying, roller coating, etc. The burning rate, porosity, rigidity, and general appearance remain unchanged while there is an appreciable increase in wet tensile strength when the cigarette paper is treated according to the process of this invention. A strip of untreated paper, supporting a weight, when immersed in a

vessel of water broke instantly, whereas the wetting time was increased to one minute before breakdown occurred when a similar strip of treated paper was subjected to the same procedure. Cigarette paper treated in accordance with the above preferred composition increases approximately 3% in weight; however, a product showing an increase of 2 to 6% in weight is entirely satisfactory for commercial use.

In the practice of this invention, it is preferable to use dilute impregnating solutions, for example, in the range from 1 to 4% oil, and 2 to 8% wax by weight, dissolved in a completely volatile solvent. The waxes which may be employed are preferably of the high melting petroleum group, in which an appreciable portion of the individual wax melts at approximately 60° C. The oils may be selected from the white oil group, such as the paraffin and naphthene base type. Readily volatile solvents which upon evaporation do not leave any residual material are preferably employed, such as hexane, benzene, toluene, and the like. Hexane, because of its high evaporation rate, is preferred, however.

The composition may be applied to either or both ends of the cigarette paper, however, I prefer to treat the entire paper.

The process of this invention has the advantage over prior art methods in that a coating is obtained, not by the formation of a continuous film or sheath, but by the impregnation of the paper in such a manner that the fibers are coated and the interstices between the individual fibers remain unbridged, thereby providing acceptable porosity, because of the "discontinuous" nature of the coating.

Cigarette paper treated according to the process of this invention is characterized by extraordinary water-repellent properties when cigarettes finished therewith become wetted upon insertion of the tip in the mouth, or are exposed to wet fingers, humid atmospheres, rainy weather conditions, etc. The original appearance and feel of the paper are not altered, and the wrapper remains sufficiently porous to permit "breathing" during combustion. This improved product obviates the need of special tips on cigarettes, such as bark, cork, straw, and materials of a similar nature, although the use of such modifications in conjunction with the paper treated in accordance with this invention is not precluded.

The process for producing the improved cigarette paper is of commercial and practical merit in that no precautions with regard to controlled humidity conditions for developing the desired coating need be taken, since the coating which merely envelops the individual fibers without bridging the interstices between the paper is produced by a simple evaporation of completely volatile solvents under ordinary temperatures and humidity conditions or by force drying without regard to humidity control.

By the term "discontinuous" as employed in the appended claims, I mean a coating which when applied in accordance with the present invention coats the individual fibers without bridging the interstices between them so that the original porosity of the paper is substantially maintained.

It is apparent that many widely different embodiments of this invention may be made without departing from the spirit and scope thereof, and, therefore, it is not intended to be limited except as indicated in the appended claims.

I claim:

1. A water-resistant cigarette paper comprising a discontinuous coating of a wax and a mineral oil, said wax having a melting point of about 60° C.

2. Product of claim 1 in which the mineral oil is a highly purified naphthenic base mineral oil.

3. Product of claim 1 in which the ratio of wax to oil is about 2 to 1.

4. The water-resistant cigarette paper of claim 1 in which the said coating is present between 2% and 6% by weight of the paper base.

5. Process of treating cigarette paper which comprises impregnating the same with a composition containing two parts of petrolatum, four parts of a wax having a melting point of about 60° C., and ninety-four parts of hexane, warming the composition to a temperature of about 100 to 105° F., passing the treated paper through squeeze rolls, and drying at an elevated temperature until the volatile solvent has evaporated.

6. A water-resistant cigarette, the paper of which comprises fibers which are coated with a composition containing a wax having a melting point of about 60° C. and a mineral oil, said composition being present in amount between 2 and 6% by weight of the paper base.

7. A water-resistant cigarette comprising a cigarette paper having a coating which is discontinuous containing a wax having a melting point of about 60° C. and a mineral oil.

8. Product of claim 7 in which the ratio of the wax to oil is about 2:1.

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