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TOBACCO COMPOSITIONS

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The present invention relates to tobacco compositions and to a novel ingredient for use in the manufacture of cigarettes, cigars, pipe and chewing tobacco, snuff and other tobacco products.

An object of the invention is to provide tobacco compositions of improved texture and keeping qualities.

Another object is to provide smoking tobacco compositions of improved flavor and free from irritating and/or toxic ingredients.

A further object is to provide a casing composition comprising a novel modifying ingredient.

The above and other objects will become apparent from the following description and claims.

In the formulation of tobacco products, particularly cigarettes, it is customary to modify the flavor, physical characteristics, aroma and smoking quality of tobaccos by the incorporation of various flavoring ingredients such as essential oils, licorice and the like, and a bland hygroscopic liquid vehicle, the main purpose of the latter being that of a conditioning agent to retain moisture and proper physical condition in the tobacco. Tobacco, itself, is extremely sensitive to variations in atmospheric humidity and requires close control of the moisture content or the dependent physical properties, particularly brittleness, by control of the atmosphere during manufacture, or the addition of hygroscopic conditioning agents. The latter may act not only by attracting or holding water in the tobacco leaf, but also as intrinsic plasticizers regardless of moisture content.

The flavoring ingredient and the conditioning agent are usually incorporated with the tobacco in solution, known as casing solution, which may be applied either by spraying or by dipping. Maintenance of proper tobacco quality is essential during manufacturing, not only to prevent undue dusting from excessive brittleness, but to insure uniform mixing, to prevent undesired fermentative changes, and to insure proper performance in the cigarette machines.

The conditioning agent likewise affects the keeping qualities of the tobacco product during storage, in preventing or retarding moisture changes, and in protecting the flavoring ingredients against deterioration by chemical changes. The retention of quality by loose cigarettes in open packages is also of importance. The conditioning agents are, therefore, designed to prevent drying out and loss of tobacco from the cigarettes and loss of the volatile flavoring ingredients. Conditioning agents should also serve to retain the amount of moisture necessary to insure proper smoking quality.

Among the conditioning agents heretofore used in the tobacco industry are molasses, sugars, particularly invert sugar, glycerol, diethylene glycol and sorbitol.

In view of their cheapness, sugars are used as much as possible but the amounts employed are limited by the fact that they do not impart sufficient elasticity or "life" to cigarette tobaccos, their hygroscopicity is inferior to that of glycerin or the glycols, their chemical reactivity causes undesired changes in the flavoring, and their combustion products do not give the most desirable smoking characteristics. Also, casing solutions high in sugar do not strike in or penetrate the tobacco as rapidly and as uniformly as do those formulated with less viscous materials.

Glycerine has more desirable physical characteristics with respect to hygroscopicity, power of imparting springiness or life to cigarette tobacco, and better performance on spraying. Also, being less reactive than sugars, it produces less changes in the flavor. However, its combustion gives rise to the highly irritating acrolein, which not only affects general smoking quality unfavorably when present to excess, but also, due to its high chemical reactivity, acts upon the flavoring ingredients in the butt portion of the cigarette thus altering undesirably the smoking characteristics during the latter stages of the smoking period.

Diethylene glycol is advantageous from the standpoint of hygroscopicity and physical quality of the tobacco during processing and smoking, but, being more volatile than glycerin, diethylene glycol appears in the smoke as such, and hence is absorbed by the system. In view of the known toxicity of diethylene glycol, its use in tobacco is considered by many to be undesirable.

Sorbitol does not yield acrolein on combustion, and does not have the chemical reactivity towards flavoring ingredients of the sugars. Sorbitol has the drawback, however, of relatively high viscosity which in certain cases is undesirable. This viscosity can be modified by substituting glycerol or other material for part of the sorbitol but then the disadvantages of the substituted material are experienced.

My invention consists in using hexides (hexitol dianhydrides) as the vehicle or conditioning agent in casing solutions for tobacco products. These substances have the useful qualities of the previously used conditioning agents but are free from the outstanding defects noted.

The hexides are the products obtained by the intramolecular loss of two mols of water from the hexitols, and may be represented by the empirical formula $C_6H_8O_2(OH)_2$. Chemically they are dihydroxy cyclic inner ethers. Physically when pure they are liquids or low melting solids, readily soluble in water, having a hygroscopicity approximately that of glycerine, volatility intermediate between glycerine and diethylene glycol, a sweetish slightly astringent taste, and practically no odor. Commercially they are obtained by the dehydration of hexitols or mixtures thereof, such as sorbitol, mannitol, dulcitol, or the mixed polyhydric alcohols obtainable by the reduction of sugars. Even starting from a single hexahydric alcohol a noncrystallizing mixture comprising hexides is usually obtained, and the commercial product is a concentrated aqueous solution of viscosity somewhat less than glycerine. The hexides are substantially non-toxic. The individual hexides are named by substituting the suffix "ide" for the suffix "itol" in the name of the parent hexitol, thus, the dihydroxy cyclic inner ether of sorbitol is sorbide; that of mannitol, mannide; and that of dulcitol, dulcide.

The hexides which I use may be substantially pure or preferably are the technical products which contain minor amounts of the monoanhydrides of hexitols or the anhydrides of hexane pentols which are found in certain commercial hexitol products.

Whereas any of the hexides may be used, particularly advantageous results are secured from the liquid mixture which contains a large proportion of sorbide and is obtained by the dehydration of commercial sorbitol.

When used in formulating tobacco products, particularly cigarettes, the hexides give desirable physical quality to the shredded tobacco during processing, and yield casing solutions which strike in rapidly and, when sprayed on, give a product of exceptional uniformity. Also the hexides have a definite solvent power for many essential oils and other flavoring ingredients, thus supplementing the use of nonaqueous volatile solvents in casing solutions.

During smoking, a portion of the hexide is distilled out and appears in the smoke stream and thus contributes to its flavor, while the portion which is burned is not undesirably irritating as are the combustion products of many conditioning agents.

Whereas desirable results are obtainable by using hexides as the sole conditioning agent or vehicle, they may be used advantageously with sugars, sorbitol, or other hygroscopic agents to diminish the viscosity and improve the hygroscopicity of the latter.

The amounts used will vary, of course, with the nature of the tobacco products desired, whether lightly or heavily cased, for use in moist or dry climates, and with the type of smoking quality aimed at.

The mode of application is identical with that of other similar ingredients in common use and presents no difficulties to skilled practitioners in the art of tobacco compounding.

Having described my invention, what I claim is:

1. A method for preparing a modified tobacco product which comprises adding a solution containing a hexide to the said tobacco product.

2. A method for preparing a modified tobacco product which comprises adding a solution of sorbide to the said tobacco product.

3. A tobacco product comprising a hexide as a conditioning agent.

4. A tobacco product comprising sorbide as a conditioning agent.

5. A casing liquid for tobacco products comprising a casing or flavoring liquid and a hexide as a conditioning agent.

6. A casing liquid for tobacco products comprising a casing or flavoring liquid and sorbide as a conditioning agent.

7. A method of preparing a tobacco product which comprises adding a mixture comprising a hexide and another hygroscopic conditioning agent to the tobacco product.

8. A tobacco product embodying sorbide as a hygroscopic agent to maintain a moisture balance in the product.

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