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(54) TOBACCO MATERIAL, TOBACCO PRODUCT TO WHICH TOBACCO MATERIAL IS ADDED, AND METHOD FOR PRODUCING TOBACCO MATERIAL

TABAKMATERIAL, TABAKPRODUKT MIT DEM DAZU HINZUGEFÜGTEN TABAKMATERIAL UND VERFAHREN ZUR HERSTELLUNG DES TABAKMATERIALS

MATIÈRE À BASE DE TABAC, PRODUIT À BASE DE TABAC AUQUEL EST AJOUTÉ DE LA MATIÈRE À BASE DE TABAC, ET PROCÉDÉ POUR PRODUIRE UNE MATIÈRE À BASE DE TABAC

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EP 2 957 183 B1

Description

TECHNICAL FIELD

[0001] The present invention relates to a tobacco product having a tobacco material added therein.

BACKGROUND ART

[0002] Various types of leaf tobacco are used in smoking articles such as cigarettes, and by changing the type of leaf tobacco used, smoking articles that exhibit a variety of smoking flavors can be obtained. One known technique for adjusting the smoking flavor of cigarettes involves blending various types of shredded leaf tobacco having different smoking flavors.

[0003] The technique of blending different types of leaf tobacco includes, as described in Patent Document 1, for example, a step in which a plurality of types of leaf tobacco raw materials separately subjected to processing such as vacuum treatment are each cut to produce cut filler leaf components, following which the cut filler leaf components are blended.

[0004] The invention described in Patent Document 1 indicates that, in the cutting treatment carried out therein, the cutting width is varied according to the type of leaf tobacco and the type of drying system, and should be set within the range of 0.15 to 2.6 mm.

[0005] Another known approach for imparting smoking flavor to tobacco involves, as described in Patent Document 2, adding to tobacco or the like a paste-like material obtained by chemically treating citrus rinds.

[0006] GB 1 139 801 A describes a method of producing a powdered tobacco extract that comprises extracting the soluble constituents from tobacco with a solvent, e.g. water, atomizing the solution and evaporating the minute droplets quickly with a hot gas to form a powder of the solute. The evaporation is carried out in a spray-dryer using hot air. The tobacco powder may be stored in containers for subsequent use as e.g. a coating to a web of paper or reconstituted tobacco. Preferably the web is formed from the non-soluble residue of the extraction process, this residue being formed into a tobacco web by a conventional paper making machine. The powder is made into a concentrated solution and coated on the web. The coated web may then by spray painted with a dispersion of finely divided tobacco in water.

[0007] GB 562 786 A describes a method of preparing tobacco in sheet, web, or filament form that comprises subjecting the tobacco to a grinding or like reducing operation in water to reduce the tobacco to particles mainly of colloidal size and to form a colloidal dispersion of the particles in water, and subjecting the product to sheet, web, or filament forming and drying operations. The tobacco used may be in the form of whole leaves, fragments, stems, etc., or the waste from the manufacture of cigars, cigarettes, etc. It is dried, broken up in a shredding or other device and ground in a ball mill to fine powder. This is mixed with water for wet grinding in the same or a separate mill to form a colloidal dispersion without destroying the taste, odor and color of the tobacco. Instead of grinding first dry and then wet, the whole grinding may take place in the presence of water and may give a product containing some fibrous particles in the colloidal dispersion. These may be filtered out if desired. The product is extruded, spread or centrifugally applied to sheet-forming surfaces, for example, on an endless belt, the inner surface of a rotating cylinder, or iron or steel plates, which may be chromium-plated. The resulting film is dried by heat, a suction pump etc. in an atmosphere controlled as to humidity.

[0008] CH 529 519 A describes formed tobacco products, such as flat or cord-like products, that are produced by (a) milling the tobacco with a liquid in a continuously operating mill; and (b) converting the finely milled product in a conventional manner into the desired form. The method gives formed tobacco products, such as cigarettes, cigars, and pipe-tobacco.

Patent Document 1: Japanese Patent Application Laid-open No. H7-184624
Patent Document 2: Japanese Patent Application Laid-open No. S59-45865

DISCLOSURE OF THE INVENTION

[0009] When smoking flavor is imparted to smoking articles, it is preferable for addition of the flavor to the smoking articles be carried out uniformly in such a way that the smoking flavor emerges evenly to the user.

[0010] In the art described in Patent Document 1, the width of the cut leaf tobacco is in units of from several hundred microns to several millimeters. In cigarettes wherein such cut leaf tobacco has been blended, the cut leaf tobacco has a tendency to segregate within the cigarette according to the size of the cut strips.

[0011] For example, because the leaf tobacco in cigarettes is generally made up of strips of tobacco leaf that have been cut to a length of 3 to 5 mm and a width of 0.5 to 1.2 mm and has a fixed volume, mixing therein a very small amount of one type of leaf tobacco tends to give rise to unevenness. Specifically, given that ordinary commercially sold cigarettes contain an average of 540 strips of shredded leaf tobacco, mixing therein 1% of one type of shredded leaf tobacco requires the

uniform admixture of 5.4 strips of shredded leaf tobacco.

[0012] If this cannot be achieved, the smoking flavor of the cigarette may lack uniformity. In the method described in Patent Document 2, the material that is added differs from tobacco, and thus cannot impart a smoking flavor distinctive to tobacco.

[0013] Accordingly, the object of this invention is to provide art which uniformly imparts a smoking flavor to tobacco products such as smoking articles.

[0014] The inventors have conducted extensive investigations, as a result of which they have discovered that a tobacco product having added therein a tobacco material containing leaf tobacco particles having an average particle size of 30 μm or less and a liquid dispersion medium for dispersing the particles, wherein the dispersion medium is a substance that is a liquid at normal temperature, wherein the weight ratio of the leaf tobacco particles, based on the total weight of the tobacco material, is from 1 to 40 wt%, and the leaf tobacco particles and the dispersion medium are included in the tobacco material in a combined amount, based on the total amount of the tobacco material, of at least 95 wt%, and wherein the tobacco product contains shredded tobacco, the tobacco material is applied to the shredded tobacco, and the weight ratio of leaf tobacco particles having an average particle size of 30 μm or less, based on the weight of the shredded tobacco, is from 0.01 to 5%, can resolve the above problems in cigarettes.

[0015] The invention is recited below.

[1] A tobacco product having added therein a tobacco material; the tobacco material includes leaf tobacco particles having an average particle size of 30 μm or less, and a dispersion medium for dispersing the particles; wherein the dispersion medium is a substance that is a liquid at normal temperature; wherein the weight ratio of the leaf tobacco particles, based on the total weight of the tobacco material, is from 1 to 40 wt%, and the leaf tobacco particles and the dispersion medium are included in the tobacco material in a combined amount, based on the total amount of the tobacco material, of at least 95 wt%; and wherein the tobacco product contains shredded tobacco, the tobacco material is applied to the shredded tobacco, and the weight ratio of leaf tobacco particles having an average particle size of 30 μm or less, based on the weight of the shredded tobacco, is from 0.01 to 5%.

[0016] The invention provides art for uniformly imparting a smoking flavor to tobacco products such as smoking articles.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

FIG. 1 is a schematic view of the cigarettes produced in Example 2 and Comparative Example 2, and of cutting positions on the cigarettes.

FIG. 2 is a graph showing the relationship between the menthol concentration (average value) within cut pieces of the cigarettes produced in Example 2 and Comparative Example 2 and the weight ratio of leaf tobacco leaf particles having an average particle size of 30 μm or less to which menthol was added (in the comparative example, a tobacco raw material flavored with menthol).

FIG. 3 is a graph showing the relationship between the coefficient of variation for the menthol concentrations within cut pieces of the cigarettes produced in Example 2 and Comparative Example 2 and the weight ratio of leaf tobacco particles having an average particle size of 30 μm or less to which menthol was added (in the comparative example, a tobacco raw material flavored with menthol).

FOR CARRYING OUT THE INVENTION

[0018] The invention is described in detail below by way of embodiments, examples and the like.

<Tobacco Material>

[0019] The tobacco material includes leaf tobacco particles having an average particle size of 30 μm or less, and a dispersion medium for dispersing the particles; wherein the dispersion medium is a substance that is a liquid at normal temperature; wherein the weight ratio of the leaf tobacco particles, based on the total weight of the tobacco material, is from 1 to 40 wt%, and the leaf tobacco particles and the dispersion medium are included in the tobacco material in a combined amount, based on the total amount of the tobacco material, of at least 95 wt.

<Leaf Tobacco Particles>

[0020] The leaf tobacco particles included in the tobacco material can be obtained by, for example, the following method.

[0021] No limitation is imposed on the types of tobacco that can be used as the leaf tobacco, although suitable use can be made of leaf tobacco raw materials from major varieties of tobacco such as flue-cured, burley, domestic and oriental tobaccos, and of fermented leaf tobacco obtained using such raw materials. As these leaf tobaccos, treated stem tobacco, expanded tobacco and sheet tobacco can also be used.

[0022] Because the above leaf tobaccos each have distinctive smoking flavors, there exists a desire for a method of uniformly adding very small amounts to smoking articles.

[0023] These leaf tobaccos are subjected to conventional drying treatment, following which they are coarsely ground using a conventional coarse grinding mill.

[0024] The drying treatment step and the coarse grinding step using a coarse grinding mill are not particularly limited, with the average particle size of the coarsely ground leaf tobacco falling in the range of from several hundred microns to several millimeters.

[0025] A liquid dispersion medium is added to the coarsely ground leaf tobacco, and these ingredients are mixed together by stirring.

[0026] The mixture obtained by such stirring and mixing is then finely ground using a wet fine grinding mill (e.g., MIC-2, available from Nara Machinery Co., Ltd.). The rotational speed of the machine is typically from 1,100 to 1,300 rpm, and grinding is carried out for a period of about 5 to 100 minutes.

[0027] By carrying out such operations, the leaf tobacco is ground to an average particle size of 30 μm or less.

[0028] When obtaining a dispersion of leaf tobacco particles dispersed in a liquid, use is generally made of a wet fine grinding mill, although the tobacco material can be obtained using even a dry fine grinding mill. Specifically, the coarsely ground leaf tobacco is finely ground to an average particle size of 30 μm or less using a dry fine grinding mill such as a jet mill, following which a liquid dispersion medium is added and stirring is carried out to effect mixture.

[0029] In this invention, the average particle size is a value determined by the laser diffraction-scattering method. The apparatus used is a laser diffraction-type particle size analyzer (e.g., the Shimadzu SALD-2100 Nanoparticle Size Analyzer), and the refractive index is set in the range of 1.60 to 0.10 i.

[0030] Using such measurement principles and instruments, the average value for the particle diameters obtained by analytic software supplied with the instrument is treated as the average particle size.

[0031] The leaf tobacco particles included in the tobacco material have an average size of 30 μm or less.

[0032] Because the finely ground leaf tobacco particles have this average size, the leaf tobacco particles in the tobacco material readily disperse evenly, making it possible to uniformly impart a smoking flavor to smoking articles.

[0033] The lower limit in the average particle size of the leaf tobacco particles is generally 5 μm or more, and may be 8 μm or more.

[0034] The average size of the leaf tobacco particles can be made larger by shortening the grinding time when using a fine grinding mill or by adjusting the dispersion medium to a low viscosity.

[0035] The dispersion medium may be one or more selected from among water, monovalent alcohols, polyvalent alcohols, sugar alcohols, sugars and polyvalent alcohol esters.

[0036] By using such a dispersion medium, the average particle size of the leaf tobacco can be adjusted to the desired value.

[0037] Illustrative examples of the dispersion medium include monovalent aliphatic alcohols such as methanol, ethanol, 1-propanol, 2-propanol, 1-butanol, 2-butanol, 2-methyl-1-propanol, 2,2-dimethylethanol and cyclohexanol; monovalent alcohols having an aromatic substituent such as benzyl alcohol; and also monovalent alcohols containing one or more halogen element, and monovalent alcohols having one or more ether bond.

[0038] In this invention, "polyvalent alcohol" refers generally to compounds having two or more hydroxyl groups on a single molecule and the types thereof are not limited. Examples thereof include glycerol and propylene glycol. Illustrative examples of sugar alcohols include sorbitol, maltitol, xylitol, erythritol, lactitol, sorbitan, xylose, arabinose, mannose and trehalose. Illustrative examples of sugars include lactose, sucrose, coupling sugar, glucose, enzyme-saccharified starch syrup, acid-saccharified starch syrup, maltose starch syrup, maltose, isomerized sugar, fructose, reduced maltose, reduced starch syrup, and honey.

[0039] Polyvalent alcohol esters are exemplified by fatty acid polyvalent alcohol esters. Examples of fatty acid polyvalent alcohol esters include fatty acid triglycerides.

[0040] The dispersion medium is a substance that is a liquid at a normal temperature.

[0041] Of the above, the use of water alone or of water in combination with a substance that dissolves in water is preferred.

[0042] Of these, the use of a mixed dispersion medium of water and glycerol is preferred from the standpoint of adjusting the average particle size of the leaf tobacco, when it has been finely ground, within the desired range.

[0043] No particular limitation is imposed on the mixing ratio of water with a dispersion medium other than water. When water and glycerol are used, these may be mixed in any ratio.

[0044] Tobacco products to which the tobacco material is added are not particularly limited, and are exemplified by smoking articles. Illustrative examples of smoking articles include cigarettes, cigar, pipe tobacco, hookah tobacco, and

tobacco for Japanese *kiseru* pipes.

[0045] Because the tobacco material is obtained by dispersing the tobacco leaf particles in a liquid dispersion medium, the tobacco material can take the form of a slurry.

[0046] To have the tobacco material take the form of a slurry, the liquid dispersion medium and the leaf tobacco particles are mixed in a weight ratio of generally 1 part of leaf tobacco per 1.5 to 99 parts by weight of tobacco material, such that the leaf tobacco particles account for 1 to 40 wt% of the tobacco material.

[0047] In cases where the tobacco material is in the form of a slurry, the tobacco material is evenly and uniformly added to the smoking article by, for example, using a spray or the like to apply the tobacco material to the smoking article. In this way, the smoking flavor ingredients present in the tobacco material can be uniformly imparted to the tobacco product.

[0048] The tobacco material is applied to shredded tobacco .

[0049] When the tobacco material is to be added to cigarettes, it also may be added to cigarette paper, filter, tipping paper or the like which make up the cigarettes. Addition may be carried out at a single place, or may be carried out at two or more places such as at the shredded tobacco and the tipping paper each. Alternatively, it is also possible to impart differing smoking flavors during the smoking of a tobacco product such as a cigarette by adding tobacco materials obtained from different types of tobacco at different points on the cigarette paper.

[0050] In cases where the tobacco material is added to the filter of a cigarette, the tobacco material is impregnated into the filter.

[0051] The tobacco product contains shredded tobacco, to impart a desired smoking flavor to the tobacco product. The weight ratio of the tobacco material and the shredded tobacco is such that the weight ratio of leaf tobacco particles having an average particle size of 30 μm or less that are included in the tobacco material, based on the weight of the shredded tobacco, is from 0.01 to 5%.

[0052] In cases where strongly flavored leaf tobacco is used in the tobacco material, a smaller weight ratio (e.g., about 0.01 to 0.1%) may be employed.

[0053] No particular limitation is imposed on the variety of tobacco in the shredded tobacco to which the tobacco material is added.

[0054] Aside from the above-described particles of finely ground leaf tobacco, various additives may be added to the tobacco material. Illustrative examples include spearmint leaves, peppermint leaves and tea leave such as green tea for smoking flavor design, food ingredients such as coffee, cocoa, cardamom, menthol and sugar, polysaccharide thickeners such as glucan and pectin used to enhance dispersibility by adjusting the viscosity, food additives such as various types of emulsifiers, sizing agents such as carboxymethyl cellulose sodium (CMC), and curing agents for enhancing handleability following addition to leaf tobacco.

[0055] The timing in the addition of these additives is not particularly specified; addition may be carried out before finely grinding the leaf tobacco raw material so that the additives are finely ground together, or may be carried out to the slurry obtained after fine grinding.

[0056] These additives may be mixed with the leaf tobacco particles in any ratio.

[0057] The leaf tobacco particles having the above-indicated specific average particle size and the dispersion medium are included in the tobacco material in a combined amount, based on the total amount of the tobacco material, of at least 95 wt%.

EXAMPLES

[0058] The invention is described more fully below by way of examples. However, the invention is not limited to the following examples.

<Example 1>

[0059] The following tests were carried out on smoking articles obtained using tobacco materials in order to determine whether the smoking flavor had been uniformly imparted.

1. Shredded Tobacco

[0060] Shredded tobacco used in commercially sold cigarettes was used in both Example 1 and Comparative Example 1.

2. Formation of Slurry from Leaf Tobacco Raw Material

[0061]

1) The tobacco used was Latakia tobacco, a type of fermented leaf tobacco that, as a leaf tobacco raw material, has a strong flavor which is easily detected with a small amount of addition. This leaf tobacco raw material was ground with a dry grinding mill (Wonder Blender WB-1, from Osaka Chemical Co., Ltd.), giving leaf tobacco powder having a particle size of from 70 to 250 μm.
2) Next, 800 g of glycerol and 200 g of water were added as the dispersion media to 250 g of the Latakia tobacco powder, and stirring was carried out with a spatula to give an intimately mixed liquid.
3) This intimate mixture was milled at 1,200 rpm for 10 minutes using a wet fine grinding mill (Micros MIC-2, from Nara Machinery Co., Ltd.).

[0062] The average particle size of the leaf tobacco particles contained in the resulting tobacco slurry (tobacco material) was about 8.8 μm.

3. Production of Cigarettes Sprayed with Latakia Tobacco Slurry (Tobacco Material)

[0063]

- The method of producing the cigarette samples for which the experimental results shown in Table 1 were obtained is described below.

1) Production of S-1 Cigarettes: Using a sprayer, 100 g of shredded tobacco was precisely sprayed with 0.05 g of the slurry prepared in section 2.3) above (weight of Latakia tobacco therein, 0.01 g), then air dried. The cigarettes were produced using this shredded tobacco.
2) Production of S-2 Cigarettes: Using a sprayer, 100 g of shredded tobacco was precisely sprayed with 0.5 g of the slurry prepared in section 2.3) above (weight of Latakia tobacco therein, 0.1 g), then air dried. The cigarettes were produced using this shredded tobacco.
3) Production of S-3 Cigarettes: Using a sprayer, 100 g of shredded tobacco was precisely sprayed with 5 g of the slurry prepared in section 2.3) above (weight of Latakia tobacco therein, 1 g), then air dried. The cigarettes were produced using this shredded tobacco.
4) Production of S-4 Cigarettes: Using a sprayer, 100 g of shredded tobacco was precisely sprayed with 25 g of the slurry prepared in section 2.3) above (weight of Latakia tobacco therein, 5 g), then air dried. The cigarettes were produced using this shredded tobacco.

<Comparative Example 1>

Production of Comparative Product (Cigarettes in which Shredded Latakia Tobacco was Blended)

[0064] Shredded Latakia tobacco in amounts of 1 wt% or 5 wt% was added to commercial shredded tobacco and thoroughly blended. Cigarettes were produced using the resulting blended tobaccos. The sample names for the respective cigarettes thus obtained were K-1 and K-2.

[0065] Controls were prepared by producing cigarettes using commercial shredded tobacco (in which shredded Latakia tobacco was not blended).

<Sensory Evaluations>

(Evaluation of Unevenness in Smoking Flavor Based on Smoking)

[0066] The samples evaluated were the following six types prepared as described above: K-1, K-2, S-1, S-2, S-3 and S-4. Each sample was judged on a "Yes" or "No" basis as to whether the smoking flavor was uneven and whether, compared with the control, there was a change in the smoking flavor. The order of smoking is the order of the samples starting from the control. Evaluation was carried out by 20 male panelists (age, 40±7 years) who were instructed to take five or more puffs when smoking a cigarette.

(Evaluation Results)

[0067] The evaluation results are shown in Table 1 below.

[Table 1]

[0068]

Table 1

Evaluations		Smoking flavor uneven						Change in smoking flavor (relative to control)					
Sample name		K-1	K-2	S-1	S-2	S-3	S-4	K-1	K-2	S-1	S-2	S-3	S-4
Ratio of leaf tobacco particles with average particle size ≤30 μm relative to shredded tobacco		1	5	0.01	0.1	1	5	1	5	0.01	0.2	1	5
Panelist	1	no	no	no	no	no	no	yes	yes	no	yes	yes	yes
	2	yes	no	no	no	no	no	yes	yes	no	yes	yes	yes
	3	yes	no	no	no	no	no	yes	yes	no	no	yes	yes
	4	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes
	5	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes
	6	yes	no	no	no	no	no	yes	yes	no	yes	yes	yes
	7	no	no	no	no	no	no	yes	yes	no	no	yes	yes
	8	yes	no	no	no	no	no	yes	yes	no	yes	yes	yes
	9	yes	no	no	no	no	no	yes	yes	no	yes	yes	yes
	10	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes
	11	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes
	12	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes
	13	yes	no	no	no	no	no	yes	yes	no	yes	yes	yes
	14	yes	no	no	no	no	no	yes	yes	no	yes	yes	yes
	15	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes
	16	no	no	no	no	no	no	yes	yes	no	yes	yes	yes
	17	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes
	18	yes	no	no	no	no	no	yes	yes	no	yes	yes	yes
	19	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes
	20	yes	no	no	no	no	no	yes	yes	no	yes	yes	yes

<Example 1 and Comparative Example 1 Evaluations>

[0069] Cigarettes were produced by rendering Latakia tobacco, which is one type of fermented leaf, into a slurry and spraying the slurry onto shredded tobacco (Example 1). As a comparative product, cigarettes in which shredded Latakia tobacco was blended in a fixed ratio were produced (Comparative Example 1). The smoking flavors of the cigarettes produced in Example 1 and Comparative Example 1 were checked by smoking the cigarettes, as a result of which it was possible to confirm that the cigarettes obtained by spraying on the tobacco material had a smoking flavor that was less uneven than the cigarettes obtained by the conventional blending method (involving the mixture of shredded tobacco with another type of shredded tobacco). It was confirmed from this that, even in cases where a small amount of the tobacco material was used, smoking flavor can be evenly imparted even to smoking articles such as cigarettes.

[0070] Hence, by making use of the tobacco material, subtle design in the smoking flavor of smoking articles is possible.

<Example 2 and Comparative Example 2>

1. Tobacco Raw Material

[0071] As in Example 1 and Comparative Example 1, commercially sold shredded tobacco was used.

2. Production of Menthol-Flavored Tobacco Raw Material

[0072] A 50 wt% menthol solution was prepared, and 20 g of the solution was uniformly sprayed onto 90 g of tobacco raw material. After spraying, the sprayed tobacco raw material was left to stand for at least one day to allow the menthol to blend in. The menthol concentration of this tobacco raw material was measured and found to be 10.8 wt%.

[0073] The tobacco raw material is referred to below as "shredded tobacco," and tobacco raw material flavored with menthol is referred to as "menthol-flavored shredded tobacco." 3. Formation of Slurry from Menthol-Flavored Shredded Tobacco

1) Menthol-flavored shredded tobacco was ground with a dry grinding mill (Wonder Blender WB-1, from Osaka Chemical Co., Ltd.), giving leaf tobacco powder having a particle size of 70 to 250 μm.
2) Next, 800 g of glycerol and 200 g of water were added as the dispersion media to 250 g of the tobacco powder of menthol-flavored shredded tobacco, and stirring was carried out with a spatula to give an intimately mixed liquid.
3) This intimate mixture was processed at 1,200 rpm for 10 minutes using a wet fine grinding mill (Micros MIC-2, from Nara Machinery Co., Ltd.).
4) The resulting tobacco slurry (tobacco material) had a menthol concentration of 2.2 wt%.

[0074] The average size of the leaf tobacco particles was 15.6 μm.

4. Production of Cigarettes Sprayed with Menthol-Flavored Shredded Tobacco Slurry

[0075]

- The method of producing the cigarette samples for which the experimental results shown in Tables 2 and 3 were obtained is described below.

1) Production of T-1 Cigarettes: Using a sprayer, 99 g of shredded tobacco was precisely sprayed with 5 g of the slurry prepared in section 3.4) above, then air dried. Cigarettes were produced using this shredded tobacco.
2) Production of T-5 Cigarettes: Using a sprayer, 95 g of shredded tobacco was precisely sprayed with 25 g of the slurry prepared in section 3.4) above, then air dried. Cigarettes were produced using this shredded tobacco.
5. Production of Comparative Product (Cigarettes in which Menthol-Flavored Shredded Tobacco was Blended)

[0076] Menthol-flavored shredded tobacco was added in an amount of 5, 10 or 20 wt% to shredded tobacco not flavored with menthol and thoroughly blended. Cigarettes were produced using the blended tobacco. The sample names for the respective cigarettes thus obtained were U-5 and U-10 and U-20. 6. Analysis of Unevenness in Menthol Distribution

1) The tobacco rod of the respective samples produced as described above, i.e., the T-1, T-5, U-5, U-10 and U-20 cigarettes, was cut every 4 mm (equivalent to the length of combustion that occurs with a single puff) as shown in FIG. 1. Cutting began at a position 4 mm from the filter, and continued up to a position 44 mm from the filter. The tobacco rod of each sample was cut into ten 4-mm pieces.
2) The menthol concentrations of the individual cut pieces from each sample were analyzed. The results are presented in Table 2. In addition, the average value, standard deviation and coefficient of variance for the menthol concentration of the cut pieces from each sample were determined. Those results are presented in Table 3.

[Table 2]

[0077]

Table 2

Menthol concentrations of individual cut pieces from each sample (wt%)											
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Example 2 (spray flavored)	T-1	0.083	0.084	0.092	0.081	0.077	0.082	0.089	0.083	0.095	0.089
	T-5	0.478	0.461	0.44	0.469	0.445	0.497	0.461	0.449	0.433	0.49
Comp. Ex. 2 (tobacco blend)	U-5	0.441	0.437	0.481	0.781	0.432	0.472	0.438	0.528	0.436	0.565
	U-10	1.007	1.041	1.452	1.084	0.956	1.366	1.051	1.075	1.029	0.961
	U-20	2.358	2.012	2.368	2.18	2.248	2.225	1.971	2.092	1.998	2.149

[Table 3]

[0078]

Table 3

Average values, standard deviations and coefficients of variation for menthol concentrations of cut pieces from each sample				
		Average (wt%)	Standard deviation	Coefficient of variation (%)
Example 2 (spray flavored)	T-1	0.09	0.01	6.4
	T-5	0.46	0.02	4.6
Comparative Example 2 (tobacco blend)	U-5	0.5	0.11	21.6
	U-10	1.1	0.17	15.3
	U-20	2.16	0.14	6.6

[0079] As described above, a tobacco raw material to which menthol had been added was finely ground using a fine grinding mill, thereby preparing a tobacco material containing tobacco particles of the particle size specified in this invention. Cigarettes containing shredded tobacco that was sprayed with this tobacco material using a sprayer were then produced. In addition, cigarettes in which a tobacco raw material to which menthol had been added was blended (mixed) in a fixed ratio were produced as comparative products.

[0080] The menthol contents of these cigarettes were quantitatively analyzed by gas chromatography.

[0081] As shown in Table 3, when the tobacco material was added to cigarettes, compared with cases in which a conventional blending method (in which one shredded tobacco is mixed with another shredded tobacco) was used, the variation in the menthol concentration among the individual cut pieces was very small, showing that the finely ground leaf tobacco raw material is evenly present in each of the cut pieces of the cigarette. In particular, even in cases where the amount of tobacco material added was small, the variation in concentration among the cut pieces was found to be small (the coefficient of variation was small).

[0082] This shows that, by using the tobacco material, subtle design in the smoking flavor of smoking articles is possible.

<Example 3>

[0083] As in Example 1, tobacco slurries (tobacco materials) were prepared using different types of leaf tobacco raw materials. The types of leaf tobacco raw materials and the treatment methods used are shown below in Table 4.

[0084] The average particle size was determined using a SALD-2100 system from Shimadzu Corporation at a refractive index setting of 1.60 to 0.10 i.

[Table 4]

[0085]

Table 4

Sample information	Leaf tobacco raw material	Burley	Flue-cured	Burley	Domestic	Oriental	Fermented leaf		
							Latakia	Perique	Dark fire-cured
	Dispersion medium	water	Glycerol (containing 20 wt% water)						
	Tobacco/dispersion medium (weight ratio)	1/9	1/4						
	Treatment time (min)	70	15						
	Treatment rate (rpm)	1,200							
Analytic results	Average value (μm)	9.6	26.5	19.6	15.8	21.2	8.8	15.6	13

[0086] By using a fine grinding mill to finely grind leaf tobacco under the conditions shown in Table 4, tobacco slurries (tobacco materials) containing leaf tobacco particles having respective average sizes of from 8.8 to 26.5 μm were obtained. It was possible in all of the samples to obtain tobacco materials containing the leaf tobacco particles having an average size of 30 μm or less specified in this invention.

INDUSTRIAL APPLICABILITY

[0087] The tobacco material is able to evenly impart a smoking flavor in very small amounts to various types of smoking articles, and thus excels as a means of imparting smoking flavor to tobacco products such as smoking articles. Moreover, the tobacco material contains leaf tobacco that has not been subjected to chemical treatment or the like, and so is a material that retains the smoking flavor inherent to tobacco.

Claims

1. A tobacco product having added therein a tobacco material;

the tobacco material comprising: leaf tobacco particles having an average particle size of 30 μm or less; and a dispersion medium for dispersing the particles; wherein the dispersion medium is a substance that is a liquid at normal temperature;
wherein the weight ratio of the leaf tobacco particles, based on the total weight of the tobacco material, is from 1 to 40 wt%,
and
the leaf tobacco particles and the dispersion medium are included in the tobacco material in a combined amount, based on the total amount of the tobacco material, of at least 95 wt%; and
wherein the tobacco product contains shredded tobacco, the tobacco material is applied to the shredded tobacco, and the weight ratio of leaf tobacco particles having an average particle size of 30 μm or less, based on the weight of the shredded tobacco, is from 0.01 to 5%.

2. The tobacco product according to claim 1, wherein the dispersion medium is one or more selected from among water, monovalent alcohols, polyvalent alcohols, sugar alcohols, sugars and polyvalent alcohol esters.

Patentansprüche

1. Tabakprodukt mit einem zugesetzten Tabakmaterial;

wobei das Tabakmaterial umfasst: Tabakblattpartikel mit einer durchschnittlichen Partikelgröße von 30 μm oder weniger; und ein Dispersionsmedium zum Dispergieren der Partikel; wobei das Dispersionsmedium eine Substanz ist, die bei Normaltemperatur flüssig ist;
wobei das Gewichtverhältnis der Tabakblattpartikel, bezogen auf das Gesamtgewicht des Tabakmaterials, 1 bis 40 Gew.-% beträgt, und
die Tabakblattpartikel und das Dispersionsmedium in dem Tabakmaterial in einer kombinierten Menge, bezogen auf die Gesamtmenge des Tabakmaterials, von mindestens 95 Gew.-% enthalten sind; und
wobei das Tabakprodukt zerkleinerten Tabak enthält, das Tabakmaterial auf den zerkleinerten Tabak aufgebracht ist und das Gewichtverhältnis von Tabakblattpartikeln mit einer durchschnittlichen Partikelgröße von 30 μm oder weniger, bezogen auf das Gewicht des zerkleinerten Tabaks, 0,01 bis 5% beträgt.

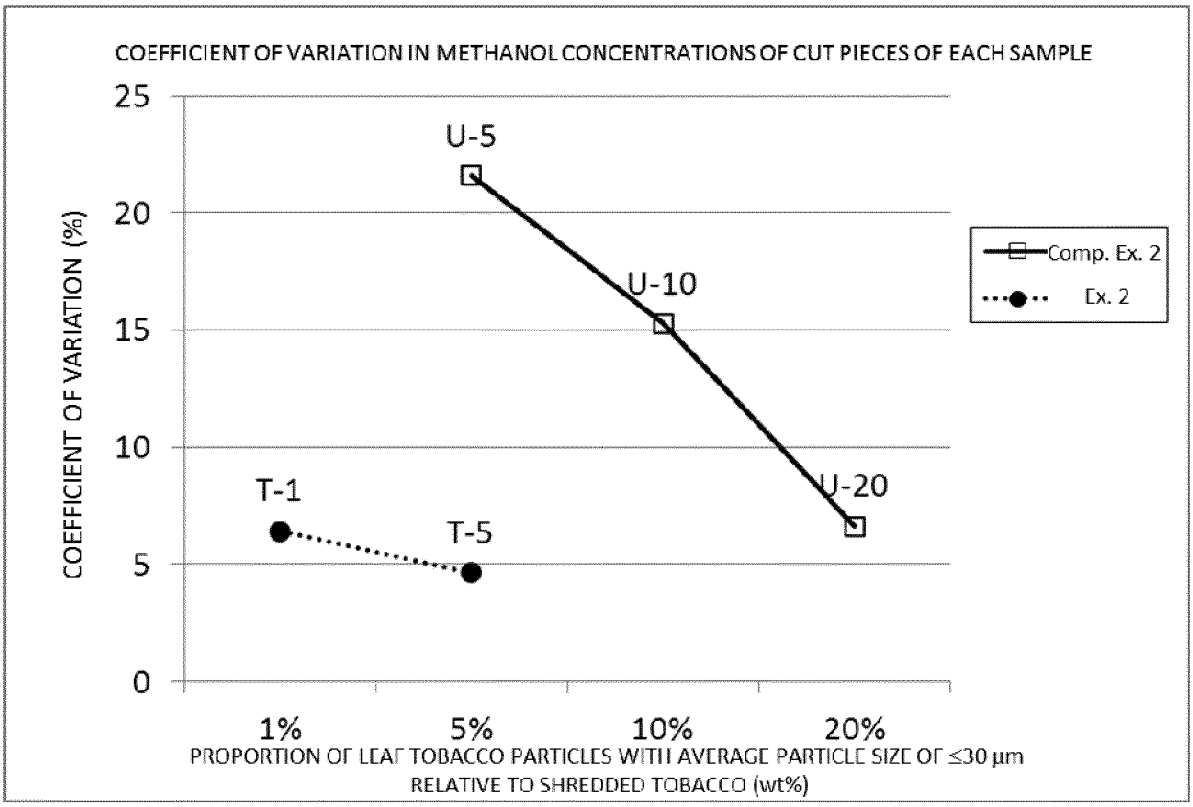
2. Tabakprodukt gemäß Anspruch 1, wobei das Dispersionsmedium eines oder mehrere, ausgewählt aus Wasser, einwertigen Alkoholen, mehrwertigen Alkoholen, Zuckeralkoholen, Zuckern und Estern mehrwertiger Alkohole, ist.

Revendications

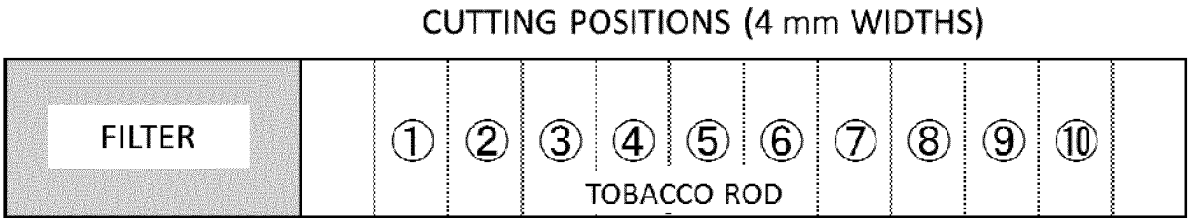
1. Produit à base de tabac dans lequel est ajoutée une matière à base de tabac ; la matière à base de tabac comprenant : des particules de feuilles de tabac ayant un diamètre particulaire moyen de 30 μm ou moins ; et un milieu de dispersion pour disperser les particules ; dans lequel le milieu de dispersion est une substance qui est un liquide à température normale ;

dans lequel le rapport pondéral des particules de feuilles de tabac, sur la base du poids total de la matière à base de tabac, est de 1 à 40 % en poids, et
les particules de feuilles de tabac et le milieu de dispersion sont inclus dans la matière à base de tabac en une quantité combinée, sur la base de la quantité totale de la matière à base de tabac, d'au moins 95 % en poids ; et dans lequel le produit à base de tabac contient du tabac haché, la matière à base de tabac est appliquée sur le tabac haché, et le rapport pondéral des particules de feuilles de tabac ayant un diamètre particulaire moyen de 30 μm ou moins, sur la base du poids du tabac haché, est de 0,01 à 5 %.

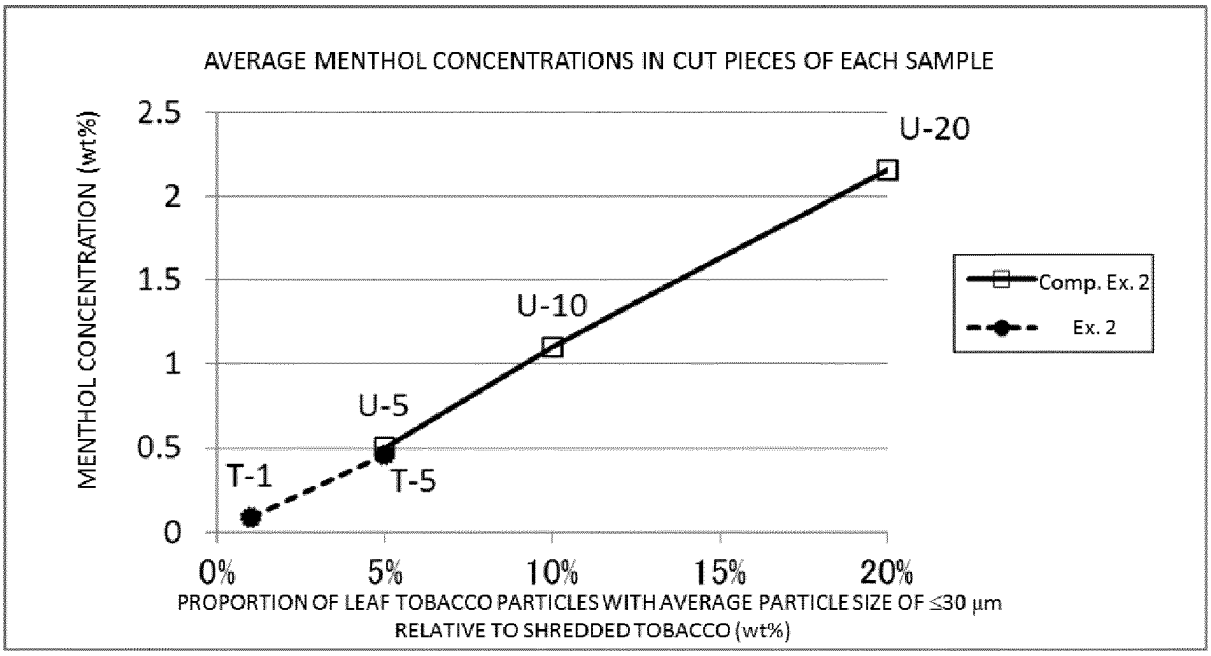
2. Produit à base de tabac selon la revendication 1, dans lequel le milieu de dispersion est un ou plusieurs sélectionnés parmi de l'eau, des alcools monovalents, des alcools polyvalents, des alcools de sucre, des sucres et des esters d'alcool polyvalents.


COEFFICIENT OF VARIATION IN METHANOL CONCENTRATIONS OF CUT PIECES OF EACH SAMPLE
COEFFICIENT OF VARIATION (%)
25
20
15
10
5
0
U-5
U-10
U-20
T-1
T-5
Comp. Ex. 2
Ex. 2
1%
5%
10%
20%
PROPORTION OF LEAF TOBACCO PARTICLES WITH AVERAGE PARTICLE SIZE OF ≤30 μm RELATIVE TO SHREDDED TOBACCO (wt%)

[Fig.1]


CUTTING POSITIONS (4 mm WIDTHS)
FILTER
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
TOBACCO ROD

[Fig.2]


AVERAGE MENTHOL CONCENTRATIONS IN CUT PIECES OF EACH SAMPLE
MENTHOL CONCENTRATION (wt%)
2.5
2
1.5
1
0.5
0
U-20
U-10
U-5
T-1
T-5
0%
5%
10%
15%
20%
Comp. Ex. 2
Ex. 2
PROPORTION OF LEAF TOBACCO PARTICLES WITH AVERAGE PARTICLE SIZE OF ≤30 μm
RELATIVE TO SHREDDED TOBACCO (wt%)

[Fig.3]

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- JP H7184624 A **[0008]**
- JP 59045865 A **[0008]**