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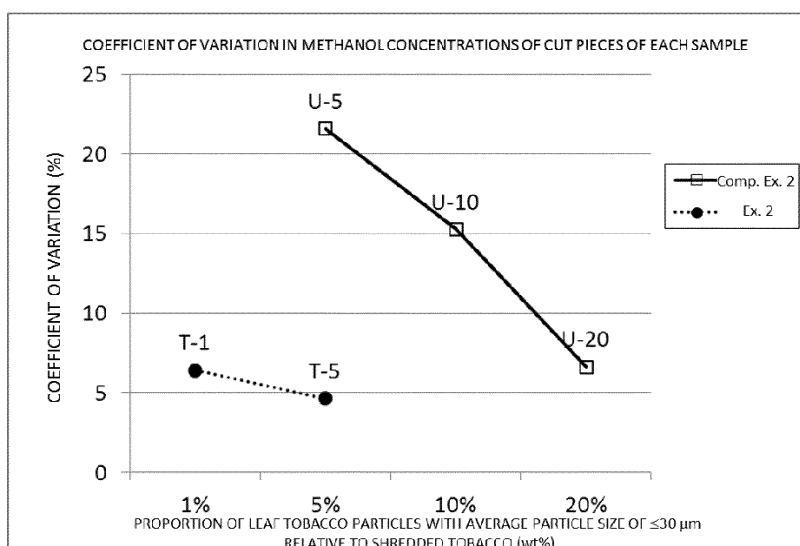
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(54) **TOBACCO MATERIAL, TOBACCO PRODUCT TO WHICH TOBACCO MATERIAL IS ADDED, AND METHOD FOR PRODUCING TOBACCO MATERIAL**

(57) Provided is a tobacco material comprising: leaf tobacco particles having an average particle size of 30 μm or less; and a dispersion medium for dispersing the particles.

[Fig.3]



Description

TECHNICAL FIELD

5 [0001] The present invention relates to a tobacco material, a tobacco product having the tobacco material added therein, and a method of producing a tobacco material.

BACKGROUND ART

10 [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.

15 [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.

20 [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.

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

25 Patent Document 2: Japanese Patent Application Laid-open No. S59-45865

DISCLOSURE OF THE INVENTION

30 [0006] 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.

[0007] 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.

35 [0008] 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.

40 [0009] 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.

[0010] Accordingly, the object of this invention is to provide art which uniformly imparts a smoking flavor to tobacco products such as smoking articles.

45 [0011] The inventors have conducted extensive investigations, as a result of which they have discovered that 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 can resolve the above problems in cigarettes.

[0012] The invention is recited below.

50 [1] A tobacco material which includes leaf tobacco particles having an average particle size of 30 μm or less, and a dispersion medium for dispersing the particles.

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

[3] The tobacco material according to [1] or [2], wherein the weight ratio of the leaf tobacco particles, based on the total weight of the tobacco material, is from 1 to 40 wt%.

55 [4] A tobacco product having added therein the tobacco material according to any one of [1] to [3].

[5] The tobacco product according to [4], wherein the tobacco product contains 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%.

[6] A method of producing a tobacco material, which method includes the step of grinding leaf tobacco together with a liquid dispersion medium using a fine grinding mill.

[7] The production method according to [6], further including, before the grinding step, the step of grinding leaf tobacco using a coarse grinding mill.

[0013] The invention provides art for uniformly imparting a smoking flavor to tobacco products such as smoking articles.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

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

[0015] The invention is described in detail below by way of embodiments, examples and the like. However, the invention is not limited to the following embodiments and examples, and may be practiced using any modifications thereto insofar as they do not depart from the spirit and scope of the invention.

<Tobacco Material of the Invention>

[0016] The tobacco material of the invention includes leaf tobacco particles having an average particle size of 30 μm or less, and a dispersion medium for dispersing the particles.

<Leaf Tobacco Particles>

[0017] The leaf tobacco particles included in the tobacco material of the invention can be obtained by, for example, the following method.

[0018] 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.

[0019] 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.

[0020] These leaf tobaccos are subjected to conventional drying treatment, following which they are coarsely ground using a conventional coarse grinding mill.

[0021] 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.

[0022] A liquid dispersion medium is added to the coarsely ground leaf tobacco, and these ingredients are mixed together by stirring.

[0023] 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.

[0024] By carrying out such operations, the leaf tobacco is ground to an average particle size of 30 μm or less.

[0025] 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 of the invention 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.

[0026] 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.

[0027] 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.

[0028] The leaf tobacco particles included in the tobacco material of the invention have an average size of 30 μm or less.

[0029] 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.

[0030] 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.

[0031] 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.

[0032] The dispersion medium may be one or more selected from among water, monovalent alcohols, polyvalent alcohols, sugar alcohols, sugars and polyvalent alcohol esters.

[0033] By using such a dispersion medium, the average particle size of the leaf tobacco can be adjusted to the desired value.

[0034] 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.

[0035] 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.

[0036] Polyvalent alcohol esters are exemplified by fatty acid polyvalent alcohol esters. Examples of fatty acid polyvalent alcohol esters include fatty acid triglycerides.

[0037] The dispersion medium is preferably a substance that is a liquid at a normal temperature, but is not limited to this and may be a solid. A substance that is a solid at a normal temperature may be used after being dissolved in another dispersion medium mentioned above (water, glycerol).

[0038] Of the above, the use of water alone or of water in combination with a substance that dissolves in water is preferred.

[0039] 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.

[0040] 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.

[0041] Tobacco products to which the tobacco material of the invention is added are not particularly limited, and are exemplified by smoking articles. Illustrative examples of smoking articles include cigarettes, cigar, pipe tobacco, hookah tobacco, tobacco for Japanese *kiseru* pipes, chewing tobacco, and snuff.

[0042] Because the tobacco material of the invention is obtained by dispersing the tobacco leaf particles in a liquid dispersion medium, the tobacco material can take the form of a slurry.

[0043] To have the tobacco material take the form of a slurry, the liquid dispersion medium and the leaf tobacco particles are typically 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).

[0044] In cases where the tobacco material of the invention 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 inventive 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.

[0045] The tobacco material of the invention is added to tobacco at any stage of production: just-harvested leaf tobacco, dried leaf tobacco, leaf tobacco to which flavoring has been added, shredded tobacco, or cigarettes.

[0046] When the tobacco material of the invention is added to cigarettes, it may be added to the shredded tobacco, 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.

[0047] In cases where the tobacco material is added to the filter of a cigarette, the tobacco material is impregnated into the filter.

[0048] In cases where the tobacco product contains shredded tobacco, to impart a desired smoking flavor to the tobacco product, it is preferable for the weight ratio of the tobacco material and the shredded tobacco to be 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%.

[0049] 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.

[0050] No particular limitation is imposed on the variety of tobacco in the shredded tobacco to which the tobacco material is added.

[0051] Aside from the above-described particles of finely ground leaf tobacco, various additives may be added to the tobacco material of the invention. 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.

[0052] 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.

[0053] These additives may be mixed with the leaf tobacco particles in any ratio.

[0054] The leaf tobacco particles having the above-indicated specific average particle size and the dispersion medium are included in the tobacco material of the invention in a combined amount, based on the total amount of the tobacco material, of preferably at least 90 wt%, and more preferably at least 95 wt%.

EXAMPLES

[0055] The invention is described more fully below by way of examples. However, the invention, insofar as it does not depart from the spirit and scope thereof, is not limited to the following examples.

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<Example 1>

[0057] The following tests were carried out on smoking articles obtained using tobacco materials of the invention in order to determine whether the smoking flavor had been uniformly imparted.

1. Shredded Tobacco

[0058] 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

[0059]

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.).

[0060] 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)

[0061]

- 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)

[0062] 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.

[0063] 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)

[0064] 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)

[0065] The evaluation results are shown in Table 1 below.

[Table 1]

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 $\leq 30 \mu\text{m}$ relative to shredded tobacco		1	5	0.01	0.1	1	5	1	5	0.01	0.2	1	5
	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

(continued)

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
Panelist	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>

[0066] 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 inventive 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 inventive tobacco material was used, smoking flavor can be evenly imparted even to smoking articles such as cigarettes.

[0067] Hence, by making use of the tobacco material of the invention, subtle design in the smoking flavor of smoking articles is possible.

<Example 2 and Comparative Example 2>

1. Tobacco Raw Material

[0068] As in Example 1 and Comparative Example 1, commercially sold shredded tobacco was used.

2. Production of Menthol-Flavored Tobacco Raw Material

[0069] 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%.

[0070] 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%.

[0071] The average size of the leaf tobacco particles was 15.6 μm .

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

[0072]

- 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)

[0073] 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

[0074]

- 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]

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]

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

[0075] 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.

[0076] The menthol contents of these cigarettes were quantitatively analyzed by gas chromatography.

[0077] As shown in Table 3, when the tobacco material of the invention 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).

[0078] This shows that, by using the tobacco material of the invention, subtle design in the smoking flavor of smoking articles is possible.

<Example 3>

[0079] 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.

[0080] 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]

Table 4

Sample information	Leaf tobacco raw material	Burley	Flue-cured	Burley	Domestic	Oriental	Fermented leaf		
	Dispersion medium	water	Glycerol (containing 20 wt% water)						
	Tobacco/disp ersion 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

[0081] 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.

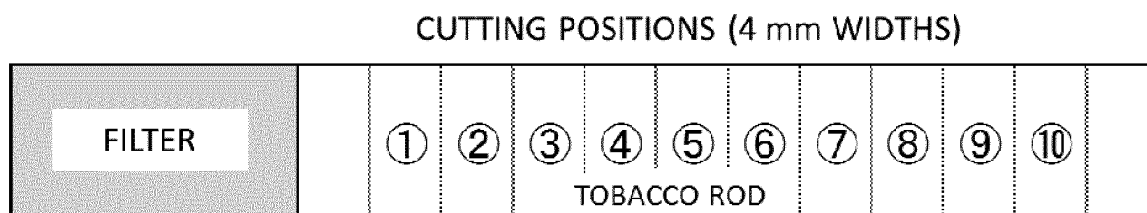
INDUSTRIAL APPLICABILITY

[0082] The tobacco material of the invention 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 of the invention 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.

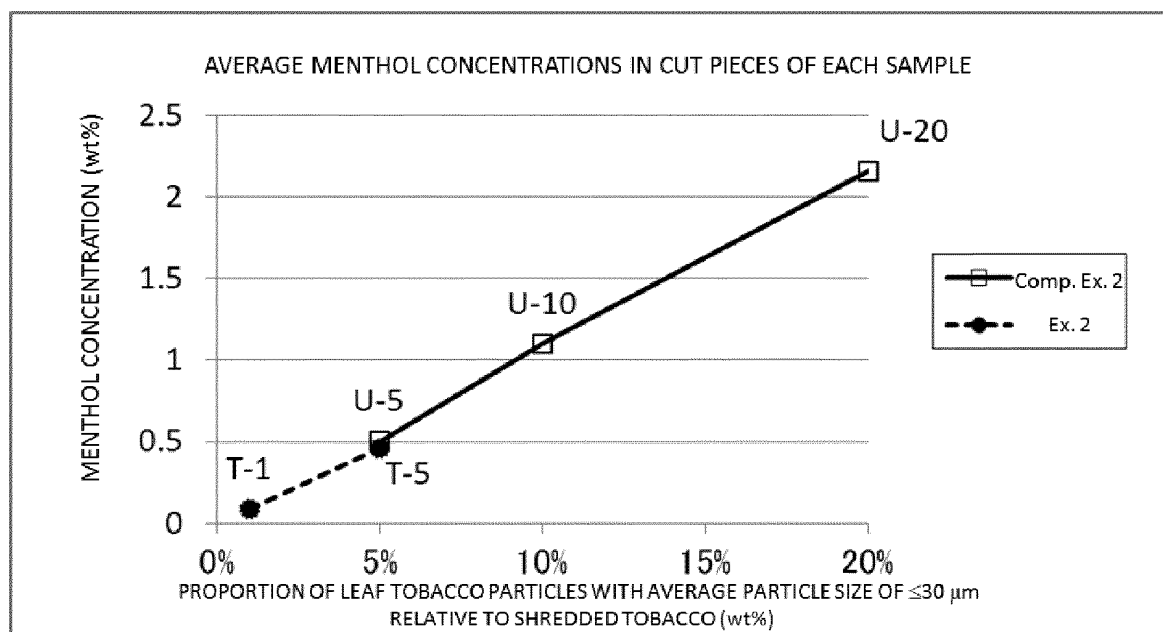
Claims

1. A tobacco material comprising: leaf tobacco particles having an average particle size of 30 μm or less; and a dispersion medium for dispersing the particles.
2. The tobacco material 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.
3. The tobacco material according to claim 1 or 2, wherein the weight ratio of the leaf tobacco particles, based on the total weight of the tobacco material, is from 1 to 40 wt%.
4. A tobacco product having added therein the tobacco material according to any one of claims 1 to 3.
5. The tobacco product according to claim 4, wherein the tobacco product contains 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%.
6. A method of producing a tobacco material, comprising the step of grinding leaf tobacco together with a liquid dispersion medium using a fine grinding mill.
7. The production method according to claim 6, further comprising, before the grinding step, the step of grinding leaf tobacco using a dry grinding mill.

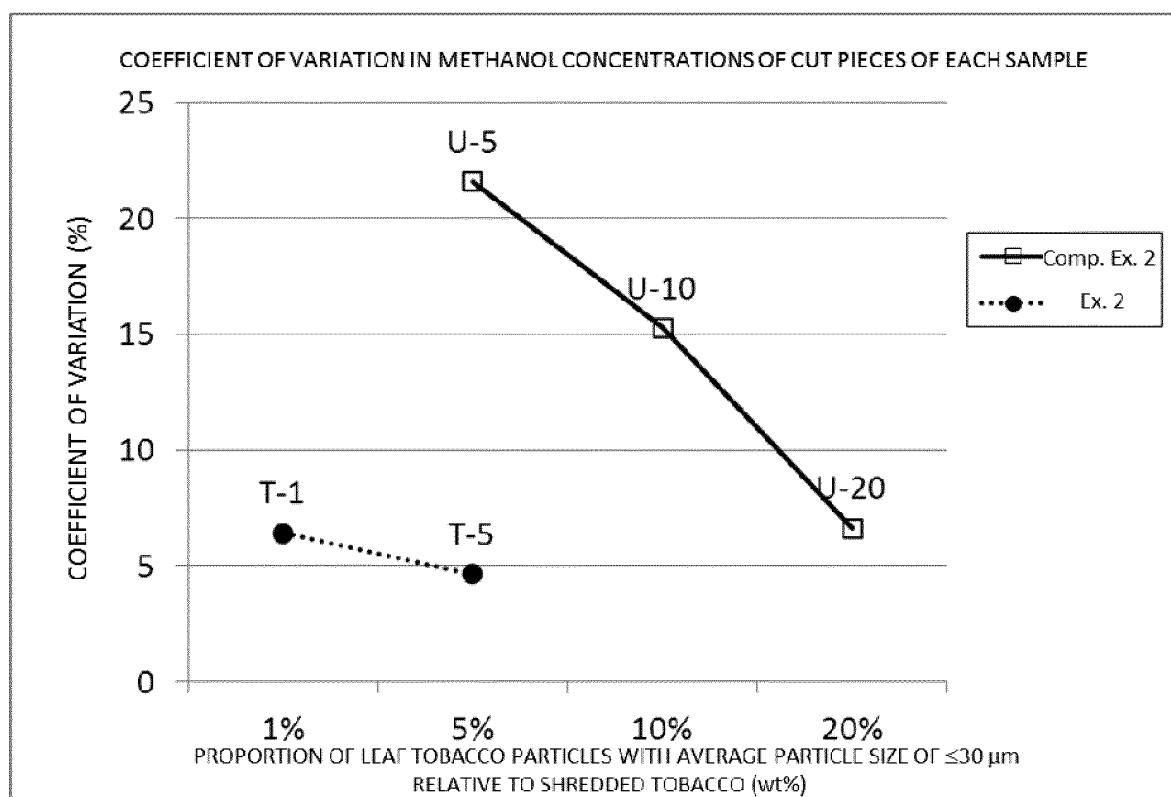
[Fig.1]



[Fig.2]



[Fig.3]



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/052226

A. CLASSIFICATION OF SUBJECT MATTER

A24B7/00(2006.01)i, A24B15/32(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24B7/00, A24B15/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014

Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 2012/074865 A1 (R. J. REYNOLDS TOBACCO CO.), 07 June 2012 (07.06.2012), page 7, line 13 to page 9, line 11; page 10, line 5 to page 11, line 6; page 13, lines 14 to 20; page 14, lines 18 to 29 & US 2012/0138073 A1 & JP 2013-544521 A	1-4, 6, 7 5
A	JP 2007-515950 A (U.S. Smokeless Tobacco Co.), 21 June 2007 (21.06.2007), paragraphs [0258] to [0264] & US 2005/0244521 A1 & EP 1691631 A & WO 2005/046363 A2	1-7

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search
11 April, 2014 (11.04.14)Date of mailing of the international search report
22 April, 2014 (22.04.14)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/052226

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 9-163966 A (British-American Tobacco (Germany) GmbH), 24 June 1997 (24.06.1997), paragraph [0045] & US 5722431 A & EP 774212 A1 & DE 19543262 A	1-7

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP H7184624 A [0005]
- JP S5945865 A [0005]