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(54) **FLAVOR MOLDED BODY FOR NON-COMBUSTION HEATING TYPE FLAVOR INHALERS, METHOD FOR PRODUCING SAME AND NON-COMBUSTION HEATING TYPE FLAVOR INHALER**

(71) Applicant: **Japan Tobacco Inc.**, Tokyo (JP)

(72) Inventor: **Ryosuke NAGASE**, Tokyo (JP)

(73) Assignee: **Japan Tobacco Inc.**, Tokyo (JP)

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(57) **ABSTRACT**

The present invention provides a flavor molded body for non-combustion heating type flavor inhalers, the flavor molded body exhibiting good handling properties, while having high strength even after use, wherein an aroma component stably volatilizes over the whole period of use. A flavor molded body for non-combustion heating type flavor inhalers, the flavor molded body containing a tobacco powder material, an adsorbent onto which a volatile aroma component is adsorbed, and an aerosol source, wherein the compression breaking strength of the flavor molded body by means of a stake plunger as determined using a tablet hardness meter is 10 N or more.

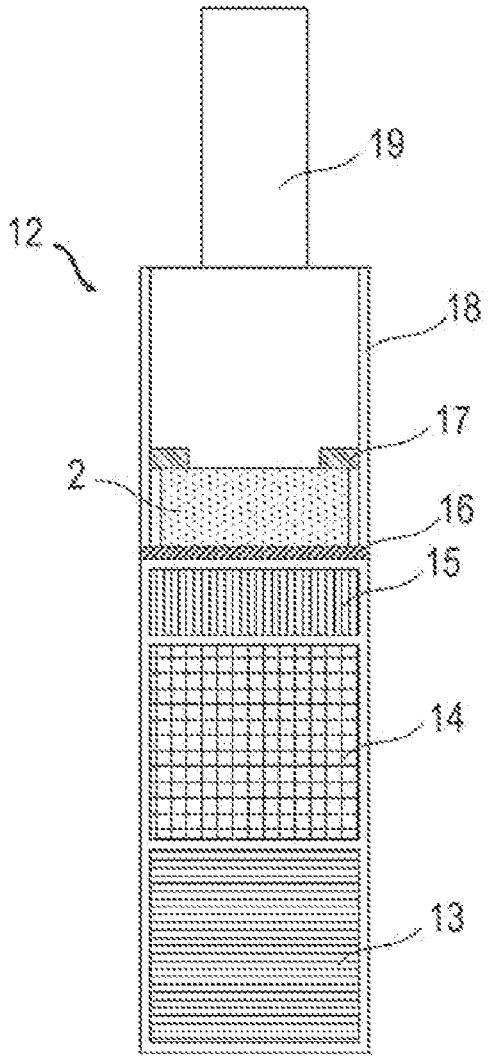


Fig. 1

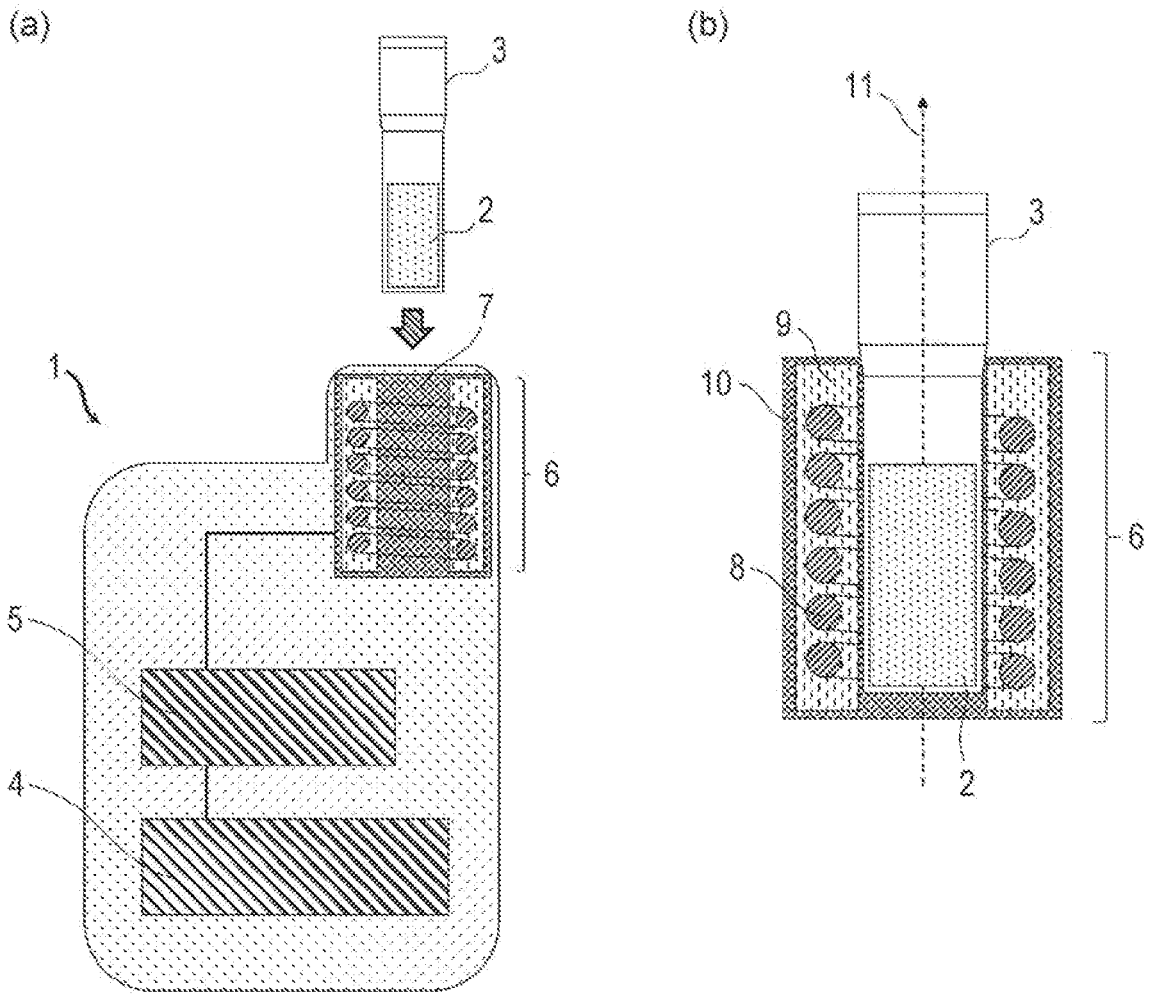


Fig. 2

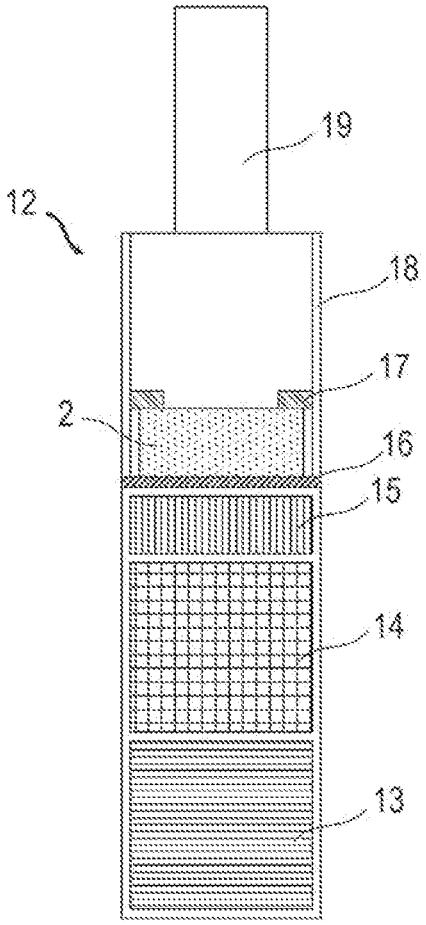


Fig. 3

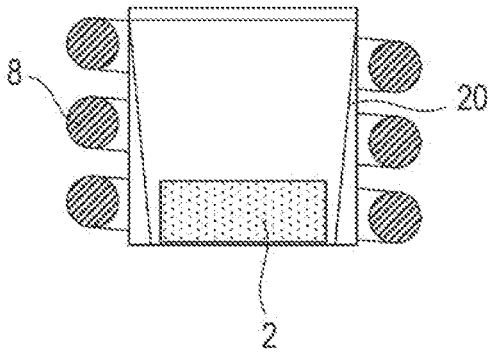
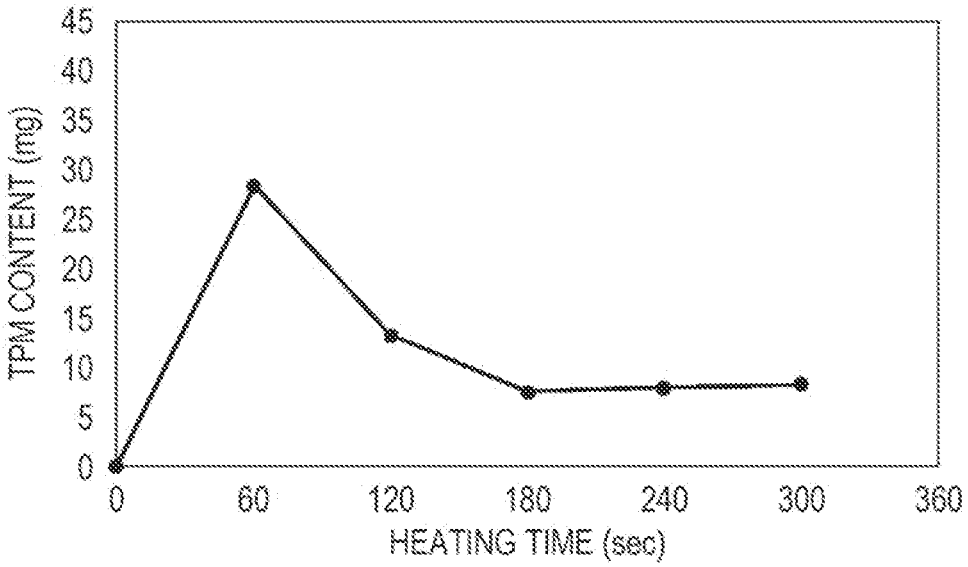


Fig. 4


45
40
35
30
25
20
15
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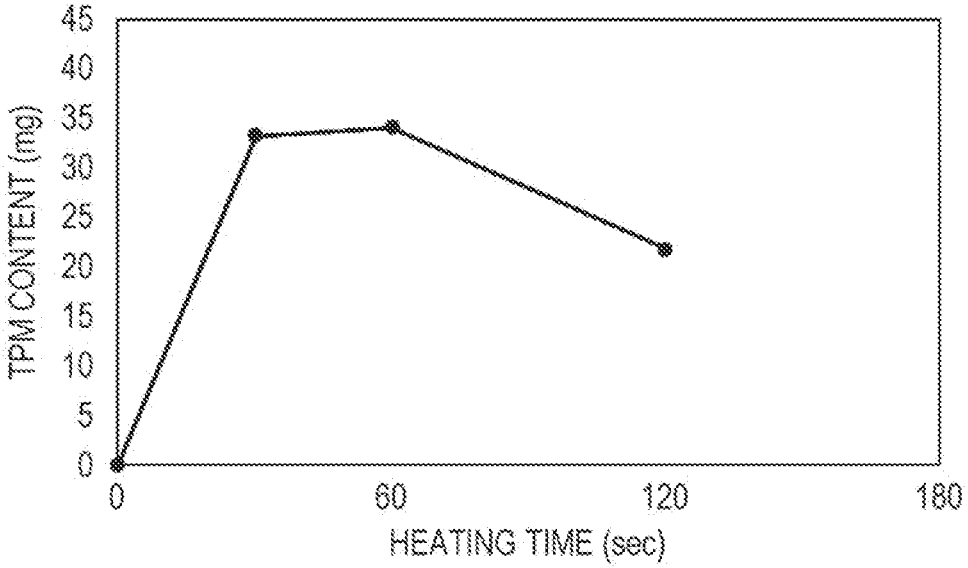
TPM CONTENT (mg)
0
60
120
180
240
300
360
HEATING TIME (sec)

Fig. 5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HEATING TIME (sec)

FLAVOR MOLDED BODY FOR NON-COMBUSTION HEATING TYPE FLAVOR INHALERS, METHOD FOR PRODUCING SAME AND NON-COMBUSTION HEATING TYPE FLAVOR INHALER

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation application of International Application No. PCT/JP2021/023025, filed on Jun. 17, 2021.

TECHNICAL FIELD

[0002] The present invention relates to a flavor molded body for non-combustion heating-type flavor inhalers, a method for producing the flavor molded body, and a non-combustion heating-type flavor inhaler.

BACKGROUND ART

[0003] A combustion-type flavor inhaler (cigarette) generates a flavor through combustion of a tobacco filler containing leaf tobacco. A non-combustion heating-type flavor inhaler, which generates a flavor by heating a flavor source containing a tobacco material instead of burning the flavor source, has been proposed as an alternative of the combustion-type flavor inhaler. The heating temperature of the non-combustion heating-type flavor inhaler is lower than the combustion temperature of the combustion-type flavor inhaler and is, for example, about 400° C. or lower. Since the non-combustion heating-type flavor inhaler is heated at low temperature, an aerosol generator, such as glycerine, is added to a flavor source in the non-combustion heating-type flavor inhaler in order to increase the amount of smoke. The aerosol generator vaporizes with heat to generate an aerosol. The aerosol together with a flavor component, such as a tobacco component, is supplied to the user, and the user can enjoy a satisfactory flavor. For example, PTL 1 discloses a flavor source for combustion-type flavor inhalers. PTL 2 discloses a flavor source for non-combustion heating-type flavor inhalers.

CITATION LIST

Patent Literature

[0004] PTL 1: Japanese Unexamined Patent Application Publication No. 63-198964.

[0005] PTL 2: Japanese Unexamined Patent Application Publication (Translation of PCT Application) No. 2021-503295.

SUMMARY OF INVENTION

Technical Problem

[0006] However, flavor sources for non-combustion heating-type flavor inhalers have the following issues. When a flavor source for non-combustion heating-type flavor inhalers is powder, it is necessary to place the flavor source in a pot or wrapping paper before use, and there is a need to improve the handling properties of the flavor source because the flavor source is usually sticky. When a flavor source for non-combustion heating-type flavor inhalers is a tobacco sheet, the tobacco sheet is placed in a tobacco rod and heated when used, but the tobacco sheet has low strength after use (after heating) so that tobacco sheet cannot maintain its shape and becomes crumbly, making post-processing difficult. In addition, desirably, a flavoring agent component stably volatilizes throughout the period of use in a flavor source for non-combustion heating-type flavor inhalers.

[0007] The present invention is directed to: a flavor molded body for non-combustion heating-type flavor inhalers, wherein the flavor molded body exhibits good handling properties while having high strength even after use, and wherein a flavoring agent component stably volatilizes throughout the period of use; a method for producing the flavor molded body; and a non-combustion heating-type flavor inhaler.

Solution to Problem

[0008] The present invention includes the following embodiments.

[0009] [1] A flavor molded body for non-combustion heating-type flavor inhalers, the flavor molded body including: a tobacco powder material; an adsorbent having a volatile flavoring agent component adsorbed thereon; and an aerosol source,

[0010] wherein the flavor molded body has a compression breaking strength of 10 N or more as determined by using a stake plunger in a tablet hardness meter.

[0011] [2] The flavor molded body according to [1], wherein the adsorbent is activated carbon.

[0012] [3] The flavor molded body according to [1] or [2], wherein the adsorbent is composed of a plurality of particles, and the plurality of particles includes two or more particles in the flavor molded body.

[0013] [4] The flavor molded body according to any one of [1] to [3], wherein the adsorbent is not exposed on a surface of the flavor molded body.

[0014] [5] The flavor molded body according to any one of [1] to [4], wherein the volatile flavoring agent component is at least one selected from the group consisting of phenethyl acetate, ethyl hexanate, isoamyl acetate, benzyl acetate, ethyl octanate, ethyl oleate, phenethyl alcohol, acetanisole, benzaldehyde, benzyl alcohol, menthol, carvone, cinnamic acid, cinnamaldehyde, cinnamyl alcohol, vanillin, ethyl vanillin, citronellol, 2,5-dimethylpyrazine, limonene, furaneol, cyclotene, decanoic acid, ethyl isovalerate, valeric acid, palmitic acid, ethyl salicylate, geraniol, guaiacol, β-ionone, linalool, linalyl acetate, nerolidol, piperonal, sotolon, α-terpineol, megastigmatrienone, damascenone, and neophytadiene.

[0015] [6] The flavor molded body according to any one of [1] to [5], wherein the aerosol source is at least one selected from the group consisting of glycerine and propylene glycol.

[0016] [7] The flavor molded body according to any one of [1] to [6], wherein the flavor molded body has a tablet shape.

[0017] [8] A non-combustion heating-type flavor inhaler including:

[0018] a flavor source container that accommodates the flavor molded body according to any one of [1] to [7];

[0019] a power supply unit that includes a power supply; and

[0020] a heater that receives supply of electric power from the power supply to heat the flavor molded body in the flavor source container.

[0021] [9] The non-combustion heating-type flavor inhaler according to [8],

[0022] wherein the adsorbent is activated carbon, and

[0023] the non-combustion heating-type flavor inhaler is a microwave heating-type flavor inhaler or an induction heating-type flavor inhaler.

[0024] [10] A method for producing the flavor molded body according to any one of [1] to [7], the method including:

[0025] a step of mixing a tobacco powder material, an adsorbent having a volatile flavoring agent component adsorbed thereon, ethanol, and an aerosol source to form a mixture;

[0026] a step of compression-molding the mixture; and

[0027] a step of removing at least part of the ethanol from the mixture.

Advantageous Effects of Invention

[0028] According to the present invention, there is provided a flavor molded body for non-combustion heating-type flavor inhalers, wherein the flavor molded body exhibits good handling properties while having high strength even after use, and wherein an flavoring agent component stably volatilizes throughout the period of use; a method for producing the flavor molded body; and a non-combustion heating-type flavor inhaler.

BRIEF DESCRIPTION OF DRAWINGS

[0029] FIG. **1** is a schematic diagram of an example induction heating-type flavor inhaler according to an embodiment.

[0030] FIG. **2** is a schematic diagram of an example non-combustion heating-type flavor inhaler according to an embodiment.

[0031] FIG. **3** is a schematic diagram of a method for measuring the TPM content over time by using the induction heating-type flavor inhaler in Examples.

[0032] FIG. **4** is a graph showing the results of the TPM content over time as measured by using an external heating-type flavor inhaler in Example 3.

[0033] FIG. **5** is a graph showing the results of the TPM content over time as measured by using the induction heating-type flavor inhaler in Example 3.

DESCRIPTION OF EMBODIMENTS

[0034] [Flavor Molded Body for Non-combustion Heating-Type Flavor Inhalers]

[0035] A flavor molded body for non-combustion heating-type flavor inhalers (hereinafter also referred to as a flavor molded body) according to an embodiment contains a tobacco powder material, an adsorbent having a volatile flavoring agent component adsorbed thereon, and an aerosol source. The flavor molded body has a compression breaking strength of 10 N or more as determined by using a stake plunger in a tablet hardness meter.

[0036] The flavor molded body according to the embodiment is less sticky since the flavor molded body has a shape with a predetermined size as a molded body. The flavor molded body according to the embodiment is easy to handle as it is because of its high strength, and there is no need to place the flavor molded body in a pot or wrapping paper. The flavor molded body according to the embodiment keeps high strength after use (after heating) because a carbonized layer is formed on the heated surface of the flavor molded body to improve breaking strength. Therefore, the molded body can maintain its shape well even after use and is easy to post-process. Furthermore, a volatile flavoring agent component is adsorbed on an adsorbent, such as activated carbon, in the flavor molded body according to the embodiment, and the volatile flavoring agent component is gradually released from the adsorbent by heating, so that the flavoring agent component stably volatilizes throughout the period of use. In addition, the water content in the molded body can be reduced when the volatile flavor component is adsorbed on the adsorbent, which facilitates shaping during molding.

[0037] (Tobacco Powder Material)

[0038] Examples of the tobacco powder material include tobacco powders obtained by cutting leaf tobacco, tobacco leaf veins, stems, roots, flowers, and other parts. Examples of the type of leaf tobacco include, but are not limited to, yellow varieties, Burley varieties, local varieties, oriental leaves, and other varieties, and fermented leaves thereof. These tobacco powder materials may be used alone or may be used in combination of two or more.

[0039] The average particle size of the tobacco powder material is preferably but not necessarily 100 μm or less. When the average particle size is 100 μm or less, the flavor molded body has higher strength. The average particle size is preferably 5 to 80 μm, more preferably 10 to 60 μm, still more preferably 20 to 50 μm. The average particle size is measured by light scattering.

[0040] (Volatile Flavoring Agent Component, Adsorbent)

[0041] Examples of the volatile flavoring agent component include, but are not limited to, phenethyl acetate, ethyl hexanate, isoamyl acetate, benzyl acetate, ethyl octanate, ethyl oleate, phenethyl alcohol, acetanisole, benzaldehyde, benzyl alcohol, menthol, carvone, cinnamic acid, cinnamaldehyde, cinnamyl alcohol, vanillin, ethyl vanillin, citronellol, 2,5-dimethylpyrazine, limonene, furaneol, cyclotene, decanoic acid, ethyl isovalerate, valeric acid, palmitic acid, ethyl salicylate, geraniol, guaiacol, β-ionone, linalool, linalyl acetate, nerolidol, piperonal, sotolon, α-terpineol, megastigmatrienone, damascenone, and neophytadiene. These volatile flavoring agent components may be used alone or may be used in combination of two or more.

[0042] The volatile flavoring agent component is adsorbed on the adsorbent. Specifically, the volatile flavoring agent component is held on the adsorbent and, for example, can be adsorbed and held in the pores of the adsorbent. Examples of the adsorbent include activated carbon, silica gel, ion exchange resin, molecular sieve, and zeolite. These adsorbents may be used alone or may be used in combination of two or more. Of these adsorbents, activated carbon is preferred because activated carbon can hold the volatile flavoring agent component well and activated carbon itself can produce heat during heating to increase the amount of flavoring agent component volatilizing in the initial stage of use when the non-combustion heating-type flavor inhaler is a microwave heating-type flavor inhaler, or an induction heating-type flavor inhaler. In general, activated carbon is not used for the flavor source for combustion-type flavor inhalers because activated carbon may generate carbon monoxide when burned.

[0043] The specific surface area of the adsorbent is preferably 500 to 3000 m^2/g, more preferably 700 to 2500 m^2/g to hold the volatile flavoring agent component well. The

specific surface area is measured by the BET method. The amount of the volatile flavoring agent component adsorbed on the adsorbent is preferably 1 to 20 parts by mass, more preferably 5 to 10 parts by mass relative to 100 parts by mass of the adsorbent. The amount of the adsorbent adsorbing the volatile flavoring agent component and contained in the flavor molded body is preferably 5 to 40 parts by mass, more preferably 10 to 30 parts by mass relative to 100 parts by mass of the tobacco powder material.

[0044] In the embodiment, the adsorbent is preferably composed of multiple particles, and the multiple particles include two or more particles in the flavor molded body. When two or more adsorbent particles are contained in the flavor molded body, the adsorbent particles are dispersed in the flavor molded body, and the amount of flavor component volatilizing per puff is stabilized. The average particle size of the adsorbent particles is not limited and may be, for example, 0.3 to 2.0 mm. The average particle size is measured by dry sieving.

[0045] In the embodiment, the adsorbent is preferably not exposed on the surface of the flavor molded body. When the adsorbent is not exposed on the surface of the flavor molded body, the flavor molded body has good appearance, and the adsorbent, such as activated carbon, does not adhere to a molding machine in forming the flavor molded body, which improves the production efficiency. For example, when the surface of the flavor molded body containing the adsorbent is covered with a component of a flavor molded body that does not contain an adsorbent, the flavor molded body having no adsorbent exposed on its surface can be obtained. The absence of the adsorbent exposed on the surface of the flavor molded body can be visually confirmed.

[0046] (Aerosol Source)

[0047] Examples of the aerosol source include glycerine and propylene glycol. These aerosol sources may be used alone or may be used in combination of two or more. The amount of the aerosol source contained in the flavor molded body is preferably 5 to 30 parts by mass, more preferably 10 to 20 parts by mass relative to 100 parts by mass of the tobacco powder material.

[0048] (Other Components)

[0049] The flavor molded body according to the embodiment can contain, for example, a cellulose powder, a tea powder, a Lamiaceae plant powder, an Apiaceae plant powder, and other components, in addition to the tobacco powder material, the adsorbent having the volatile flavoring agent component adsorbed thereon, and the aerosol source.

[0050] (Physical Properties, Shape, and Other Features of Flavor Molded Body)

[0051] The flavor molded body according to the embodiment has a compression breaking strength of 10 N or more as determined by using a stake plunger in a tablet hardness meter. When the compression breaking strength is 10 N or more, the flavor molded body has good handling properties while having high strength even after use. The compression breaking strength is preferably 10 to 200 N, more preferably 20 to 150 N, still more preferably 30 to 120 N. Specifically, the compression breaking strength is a value before heating measured by the method described below.

[0052] The flavor molded body according to the embodiment may have, but not limited to, for example, a tablet shape, a plate shape, a cylindrical shape, a rod shape, a spherical shape, a hollow shape, a porous shape, or other shapes. The flavor molded body according to the embodiment preferably has a tablet shape in view of easy in use and to keep the strength. When the flavor molded body has a tablet shape, the flavor molded body has, for example, a size of 5 to 15 mm in diameter and 5 to 10 mm in height.

[0053] [Method for Producing Flavor Molded Body for Non-Combustion Heating-Type Flavor Inhalers]

[0054] A method for producing the flavor molded body for non-combustion heating-type flavor inhalers according to an embodiment includes the following steps. A step of mixing a tobacco powder material, an adsorbent having a volatile flavoring agent component adsorbed thereon, ethanol, and an aerosol source to form a mixture (hereinafter also referred to as a "material mixing step"); a step of compression-molding the mixture (hereinafter also referred to as a "compression molding step"); and a step of removing at least part of the ethanol from the mixture (hereinafter also referred to as an "ethanol removing step"). In the method according to the embodiment, the flavor molded body according to the embodiment can be produced efficiently and easily.

[0055] In the method according to the embodiment, the addition of ethanol in the material mixing step may cause a resin composition derived from the tobacco powder material to move to the surface of the tobacco powder material, so that the tobacco powder material and other materials may be bonded to each other with the resin composition therebetween to produce the flavor molded body having high strength. The addition of ethanol may also cause condensation of cellulose with adjacent cellulose in the tobacco powder material through dehydration of some hydroxyl groups of cellulose to produce the flavor molded body having high strength. In the method according to the embodiment, the flavor molded body having high strength can be produced without a need of using a common binding agent (binder) during molding and without ethanol used affecting the flavor because of removal of most of ethanol used.

[0056] Hereinafter, each step in the method according to the embodiment will be described, but the method according to the embodiment may include other steps in addition to the material mixing step, the compression molding step, and the ethanol removing step. The ethanol removing step may be performed during the compression molding step or after the compression molding step as long as the ethanol removing step is performed after the material mixing step.

[0057] (Material Mixing Step)

[0058] This step involves mixing a tobacco powder material, an adsorbent having a volatile flavoring agent component adsorbed thereon, ethanol, and an aerosol source to form a mixture. The amount of ethanol mixed is preferably 1 to 20 parts by mass relative to 100 parts by mass of the tobacco powder material. When 1 part by mass or more of ethanol is mixed relative to 100 parts by mass of the tobacco powder material, the flavor molded body has higher strength. When 20 parts by mass or less of ethanol is mixed relative to 100 parts by mass of the tobacco powder material, it is easy to perform compression molding. In this step, 3 to 17 parts by mass of ethanol is more preferably mixed, 5 to 15 parts by mass of ethanol is still more preferably mixed, relative to 100 parts by mass of the tobacco powder material.

[0059] In this step, other components, such as a cellulose powder, a tea powder, a Lamiaceae plant powder, and an Apiaceae plant powder, can be further mixed, in addition to the tobacco powder material, the adsorbent having the volatile flavoring agent component adsorbed thereon, etha-

nol, and the aerosol source. In particular, a cellulose powder can further improve the strength of the flavor molded body. The materials may be mixed by any method, and can be mixed by using a common mixer, such as a V-type mixer.

[0060] (Compression Molding Step)

[0061] This step involves compression-molding the mixture obtained in the material mixing step. The compression molding may be performed by using any compression molding machine but, for example, a rotary tablet press or other machines may be used. The conditions for the compression molding are not limited, but molding is preferably performed at a compression pressure of, for example, 2 kN or more. As described above, for example, at least part of the ethanol may be removed by natural drying or other methods during compression molding.

[0062] (Ethanol Removing Step)

[0063] This step involves removing at least part of the ethanol from the mixture. As described above, at least part of the ethanol may be removed from the mixture during the compression molding step, or may be removed from the molded body produced after the compression molding step.

[0064] In this step, at least part of ethanol is preferably removed at 10° C. to 40° C. Ethanol can be sufficiently removed by removing at least part of ethanol at 10° C. or higher. The removal of at least part of ethanol at 40° C. or lower can reduce the effect of heating on the flavor. The temperature at which at least part of ethanol is removed is more preferably 15° C. to 35° C., still more preferably 20° C. to 30° C. When at least part of ethanol is removed at 10° C. to 40° C., at least part of ethanol can be removed by, for example, drying at 10° C. to 40° C. for 30 to 180 minutes. The removal of at least part of ethanol can be performed by using, for example, an electric oven, hot-air drying, a tunnel dryer, or natural drying. The removal of ethanol is preferably performed in an open space rather than a closed space.

[0065] In this step, 90 mass % or more of ethanol contained in the mixture (molded body) is preferably removed, 95 mass % or more of ethanol is more preferably removed, 99 mass % or more of ethanol is still more preferably removed, and all ethanol is yet still more preferably removed.

[0066] [Non-Combustion Heating-Type Flavor Inhaler]

[0067] A non-combustion heating-type flavor inhaler according to an embodiment includes: a flavor source container that accommodates the flavor molded body according to the embodiment; a power supply unit that includes a power supply; and a heater that receives supply of electric power from the power supply to heat the flavor molded body in the flavor source container. Including the flavor molded body according to the embodiment, the non-combustion heating-type flavor inhaler according to the embodiment can stably supply the flavoring agent component to the user throughout the period of use. The flavor molded body exhibits good handling properties while having high strength even after use, so that the flavor molded body is easy to post-process.

[0068] The non-combustion heating-type flavor inhaler is preferably a microwave heating-type flavor inhaler or an induction heating-type flavor inhaler. When the non-combustion heating-type flavor inhaler is a microwave heating-type flavor inhaler or an induction heating-type flavor inhaler, the adsorbent contained in the flavor molded body can be activated carbon. When the non-combustion heating-type flavor inhaler is heated by heat transfer using a heating heater, it takes some time for the flavor source to reach the temperature required to generate an aerosol in the initial stage of use, which reduces the amount of the flavor component volatilizing in the initial stage of use. However, when the non-combustion heating-type flavor inhaler according to the embodiment is a microwave heating-type flavor inhaler or an induction heating-type flavor inhaler, and the adsorbent contained in the flavor molded body is activated carbon, activated carbon itself produces heat during heating so that activated carbon reaches high temperature more quickly in the initial stage of use to increase the amount of flavor component volatilizing in the initial stage of use. Therefore, the flavoring agent component can be stably volatilized throughout the period of use.

[0069] FIG. **1** illustrates an example of the induction heating-type flavor inhaler according to the embodiment. An induction heating-type flavor inhaler **1** illustrated in FIG. **1**(*a*) includes: a flavor source container **3** that accommodates a flavor molded body **2** according to the embodiment; a power supply unit **4** that includes a power supply; a heater **6** that receives supply of electric power from the power supply to heat the flavor molded body **2** in the flavor source container **3** by induction heating; and a controller **5** that controls the temperature of the heater **6**. The flavor source container **3** is detachably attached into a chamber **7** of the heater **6**, and the flavor source container **3** is inserted into the chamber **7** of the heater **6** when used. Upon instructions from the controller **5**, electric power is supplied to the heater **6** from the power supply of the power supply unit **4** to heat the flavor molded body **2** by induction heating.

[0070] FIG. **1**(*b*) illustrates an enlarged view of the heater **6** in the induction heating-type flavor inhaler **1** illustrated in FIG. **1**(*a*). An induction coil **8** of the heater **6** is buried in a mold **9** made of heat-dissipating non-magnetic material with high thermal conductivity. A shielding layer **10** for preventing leakage of electromagnetic waves is formed on the outer circumference of the mold **9**. Although not illustrated in FIG. **1**(*b*), a heat-resistant resin layer made of PEEK or other materials may be formed on the inner side of the mold **9**. The flavor source container **3** includes a flow path **11** through which an aerosol flows from the end surface of the flavor source container **3** on the non-mouthpiece end side to the end surface on the mouthpiece end side. The flavor source container **3** is inserted into the chamber **7** of the heater **6**, and the flavor molded body **2** is heated by induction heating in the heater **6** to generate an aerosol containing the flavor component, and the user can inhale the aerosol through the flow path **11**, whereby the aerosol and the flavor component can be supplied to the user. The heating temperature in the induction heating is preferably 150° C. to 400° C., more preferably 200° C. to 350° C. The heating temperature refers to the temperature of the heater.

[0071] FIG. **2** illustrates another example of the non-combustion heating-type flavor inhaler according to the embodiment. A non-combustion heating-type flavor inhaler **12** illustrated in FIG. **2** includes: a material chamber **18** in which the flavor molded body **2** according to the embodiment can be disposed; a battery **14**; a heater **15** that receives supply of electric power from the battery **14** to heat the flavor molded body **2**; a controller **13** that controls the temperature of the heater **15**; and a mouthpiece **19**. In the material chamber **18**, the flavor molded body **2** is fixed with a material positioning jig **17**. The flavor molded body according to the embodiment is less sticky and easy to

handle because of its high strength, and there is thus no need to place the flavor molded body in a pot or wrapping paper. The flavor molded body can thus be, for example, directly fixed and disposed in the material chamber. The heater **15** is heated when electric power is supplied to the heater **15** from the battery **14** upon instructions from the controller **13**. The heat from the heater **15** is transmitted to the flavor molded body **2** through a metal plate **16** to heat the flavor molded body **2**. Heating the flavor molded body **2** generates an aerosol containing the flavor component, and the aerosol is inhaled by the user through the mouthpiece **19**, whereby the aerosol and the flavor component are supplied to the user. The heating temperature is preferably 150° C. to 400° C., more preferably 200° C. to 350° C. The heating temperature refers to the temperature of the heater.

EXAMPLES

[0072] The embodiments will be described below in more detail by way of Examples, but the embodiments are not limited to these Examples. The measurement of the compression breaking strength before and after heating, the measurement of the TPM content over time, and the sensory evaluation were carried out in accordance with the following methods.

[0073] [Measurement of Compression Breaking Strength Before and After Heating]

[0074] The compression breaking strength of the produced flavor molded body before and after heating was measured by using a stake plunger in a tablet hardness meter. In the measurement before heating, specifically, a stake plunger (product name: tablet hardness meter TH-1 available from AS ONE Corporation) was gradually lowered to reach the flavor molded body at room temperature (22° C.), and the strength at which the flavor molded body was compressed and broken was measured 3 times by using a tablet hardness meter (product name: tablet hardness meter TH 1 available from AS ONE Corporation). The average of three measurements was defined as the compression breaking strength (N). In the measurement after heating, specifically, the flavor molded body was heated at 40° C. for 2 hours and then cooled to room temperature, and the compression breaking strength was measured in the same manner as in the measurement before heating. Since the stake plunger has a conical shape to be in contact with a test sample, and the test sample is pressed by the tip of the conical shape, a high pressure can be applied to one point.

[0075] [Measurement of TPM Content Over Time]

[0076] The TPM content over time was measured for the produced flavor molded body by using an external heating-type flavor inhaler and an induction heating-type flavor inhaler in accordance with the following methods.

[0077] (1) External Heating-Type Flavor Inhaler

[0078] The produced flavor molded body was placed in a material chamber in an external heating-type flavor inhaler PAX (product name, available from PAX Labs), and the PAX was powered to heat the flavor molded body through heat conduction from outside. The aerosol generated by heating was collected at regular intervals, and the mass (total particulate matter content (TPM content)) of the collected material was measured for evaluation.

[0079] (2) Induction Heating-Type Flavor Inhaler

[0080] The produced flavor molded body was accommodated in a cup **20** made of aluminum as illustrated in FIG. **3**. The cup **20** had multiple fine vent holes at its bottom, and an aluminum plate (not shown) and the flavor molded body **2** on the aluminum plate were disposed on the bottom of the cup **20**. The flavor molded body accommodated in the cup **20** had the same mass as the flavor molded body placed in the material chamber in the external heating-type flavor inhaler in (1). The cup **20** was disposed in an induction heating device including an induction coil **8** to heat the flavor molded body **2** by induction heating. The aerosol generated by induction heating was collected at regular intervals, and the mass (total particulate matter content (TPM content)) of the collected material was measured for evaluation.

[0081] [Sensory Evaluation]

[0082] The produced flavor molded body (300 mg) was placed in a material chamber in an external heating-type flavor inhaler PAX3 (product name, available from PAX Labs), and the PAX was powered to heat the flavor molded body through heat conduction from outside. The aerosol generated by heating was inhaled by seven professional panelists, and the sensory evaluation for 1 to 10 puffs (initial stage of use), 11 to 25 puffs (early middle stage of use), 26 to 40 puffs (late middle stage of use), and 41 to 50 puffs (late stage of use) was carried out by freely making a comment. The seven professional panelists were well trained to perform the sensory evaluation of the non-combustion heating-type flavor inhaler, and it has been confirmed that the evaluation threshold is the same and standardized among the professional panelists.

Example 1

[0083] Kuraray Coal (product name, available from Kuraray Co., Ltd., granular activated carbon, specific surface area: 500 to 2500 m^2/g) (1 g) was added to 10 ml of a flavoring agent component solution having a flavoring agent composition (concentration ratio) (phenylethyl acetate: 613 mass ppm, ethyl hexanate: 341 mass ppm, isoamyl acetate: 560 mass ppm, benzyl acetate: 350 mass ppm, ethyl octanate: 632 mass ppm, ethyl oleate: 635 mass ppm), and the mixture was shaked for 30 minutes. The collected activated carbon was placed on an aluminum dish and dried in a ceramic heater set at 60° C. for 60 minutes. Accordingly, activated carbon having the volatile flavoring agent component adsorbed thereon (flavoring agent-adsorbed activated carbon) was prepared. The amount of the volatile flavoring agent component adsorbed on the activated carbon was 3 parts by mass relative to 100 parts by mass of the activated carbon.

[0084] Ethanol (1 part by mass) and glycerine (20 parts by mass) were added to 100 parts by mass of a tobacco powder material (leaf tobacco, Brazilian yellow variety) having an average particle size of 30 μm and lightly mixed with a spatula. The obtained mixture was then shaked for 30 minutes. The activated carbon (30 parts by mass) having the volatile flavoring agent component adsorbed thereon was then added to 100 parts by mass of the tobacco powder material and mixed to form a mixture. The obtained mixture was molded into a tablet shape at a compression pressure of 3 kN by using a compression molding machine (product name: TDP 0, available from LFA Machines Oxford LTD). The obtained molded body was dried at 40° C. for 3 hours to remove ethanol contained in the molded body, whereby a flavor molded body was produced. The compression breaking strength of the flavor molded body after and before

heating was measured in accordance with the method described above. The results are shown in Table 1.

Example 2

[0085] A flavor molded body was produced in the same manner as in Example 1 except that the amount of ethanol added was changed to 10 parts by mass of ethanol relative to 100 parts by mass of the tobacco powder material, and the compression breaking strength of the flavor molded body before and after heating was measured. The results are shown in Table 1.

Example 3

[0086] A flavor molded body was produced in the same manner as in Example 1 except that the amount of ethanol added was changed to 20 parts by mass of ethanol relative to 100 parts by mass of the tobacco powder material, and the compression breaking strength of the flavor molded body before and after heating was measured. The results are shown in Table 1. The TPM content over time for the produced flavor molded body was measured in accordance with the method described above. The measurement results using the external heating-type flavor inhaler was shown in FIG. **4**, and the measurement results using the induction heating-type flavor inhaler was shown in FIG. **5**. The sensory evaluation was further carried out for the produced flavor molded body in accordance with the method described above. The results are shown in Table 2.

TABLE 1

	Composition of Materials of Flavor Molded Body (parts by mass)				Compression Breaking Strength (N)	
	tobacco powder material	ethanol	glycerine	flavoring agent-adsorbed activated carbon	before heating	after heating
Example 1	100	1	20	30	49	135
Example 2	100	10	20	30	50	174
Example 3	100	20	20	30	49	133

TABLE 2

Evaluation stage	Evaluation Comment
1 to 10 puffs (initial stage of use)	The rise speed is slow, and the amount of smoke is slightly low in the rise time. The smoke volume feeling gradually increases after several puffs. The user can taste a yellowish flavor and a flower-like flavor.
11 to 25 puffs (early middle stage of use)	The smoke volume feeling distinctly increases, and the user can clearly taste a flower-like flavor and a fruity flavor. The smoking heaviness also increases, which gives the user a feeling of satisfaction. The user can taste an orange flavor from tobacco.
26 to 40 puffs (late middle stage of use)	The smoke volume feeling continues, and the user can also continuously taste a flower-like flavor and a fruity flavor. The level of smoking heaviness is kept, which gives the user a feeling of satisfaction. The tobacco flavor is slightly deep orange.
41 to 50 puffs (late stage of use)	The smoke volume feeling continues, and the user can also continuously taste a flower-like flavor and a fruity flavor. The level of smoking heaviness slightly decreases. The tobacco flavor is replaced by a deep orange flavor, but there is no significant difference in flavor.

[0087] Table 1 shows that the flavor molded bodies according to the embodiment did not decrease but even increased in compression breaking strength after heating. Table 2 shows that the flavoring agent component stably volatilized throughout the period of use in the flavor molded body according to the embodiment. This point can also be understood from FIGS. **4** and **5**. In particular, FIG. **5** shows that, when the induction heating-type flavor inhaler was used as a non-combustion heating-type flavor inhaler, the amount of the flavor component volatilizing particularly at the initial stage of use was higher, and the flavoring agent component more stably volatilized throughout the period of use, than in the case where the external heating-type flavor inhaler shown in FIG. **4** was used.

REFERENCE SIGNS LIST

[0088] **1** induction heating-type flavor inhaler
[0089] **2** flavor molded body
[0090] **3** flavor source container
[0091] **4** power supply unit
[0092] **5** controller
[0093] **6** heater
[0094] **7** chamber
[0095] **8** induction coil
[0096] **9** mold
[0097] **10** shielding layer
[0098] **11** flow path
[0099] **12** non-combustion heating-type flavor inhaler
[0100] **13** controller
[0101] **14** battery
[0102] **15** heater
[0103] **16** metal plate
[0104] **17** material positioning jig
[0105] **18** material chamber
[0106] **19** mouthpiece
[0107] **20** cup

1. A flavor molded body for non-combustion heating-type flavor inhalers, the flavor molded body comprising: a tobacco powder material; an adsorbent having a volatile flavoring agent component adsorbed thereon; and an aerosol source,

wherein the flavor molded body has a compression breaking strength of 10 N or more as determined by using a stake plunger in a tablet hardness meter.

2. The flavor molded body according to claim **1**, wherein the adsorbent is activated carbon.

3. The flavor molded body according to claim 1, wherein the adsorbent is composed of a plurality of particles, and the plurality of particles includes two or more particles in the flavor molded body.

4. The flavor molded body according to claim 1, wherein the adsorbent is not exposed on a surface of the flavor molded body.

5. The flavor molded body according to claim 1, wherein the volatile flavoring agent component is at least one selected from the group consisting of phenethyl acetate, ethyl hexanate, isoamyl acetate, benzyl acetate, ethyl octanate, ethyl oleate, phenethyl alcohol, acetanisole, benzaldehyde, benzyl alcohol, menthol, carvone, cinnamic acid, cinnamaldehyde, cinnamyl alcohol, vanillin, ethyl vanillin, citronellol, 2,5-dimethylpyrazine, limonene, furaneol, cyclotene, decanoic acid, ethyl isovalerate, valeric acid, palmitic acid, ethyl salicylate, geraniol, guaiacol, β-ionone, linalool, linalyl acetate, nerolidol, piperonal, sotolon, α-terpineol, megastigmatrienone, damascenone, and neophytadiene.

6. The flavor molded body according to claim 1, wherein the aerosol source is at least one selected from the group consisting of glycerine and propylene glycol.

7. The flavor molded body according to claim 1, wherein the flavor molded body has a tablet shape.

8. A non-combustion heating-type flavor inhaler comprising:

a flavor source container that accommodates the flavor molded body according to claim 1;

a power supply unit that includes a power supply; and

a heater that receives supply of electric power from the power supply to heat the flavor molded body in the flavor source container.

9. The non-combustion heating-type flavor inhaler according to claim 8,

wherein the adsorbent is activated carbon, and

the non-combustion heating-type flavor inhaler is a microwave heating-type flavor inhaler or an induction heating-type flavor inhaler.

10. A method for producing the flavor molded body according to claim 1, the method comprising:

a step of mixing a tobacco powder material, an adsorbent having a volatile flavoring agent component adsorbed thereon, ethanol, and an aerosol source to form a mixture;

a step of compression-molding the mixture; and

a step of removing at least part of the ethanol from the mixture.

11. The flavor molded body according to claim 2, wherein the adsorbent is composed of a plurality of particles, and the plurality of particles includes two or more particles in the flavor molded body.

12. The flavor molded body according to claim 2, wherein the adsorbent is not exposed on a surface of the flavor molded body.

13. The flavor molded body according to claim 3, wherein the adsorbent is not exposed on a surface of the flavor molded body.

14. The flavor molded body according to claim 2, wherein the volatile flavoring agent component is at least one selected from the group consisting of phenethyl acetate, ethyl hexanate, isoamyl acetate, benzyl acetate, ethyl octanate, ethyl oleate, phenethyl alcohol, acetanisole, benzaldehyde, benzyl alcohol, menthol, carvone, cinnamic acid, cinnamaldehyde, cinnamyl alcohol, vanillin, ethyl vanillin, citronellol, 2,5-dimethylpyrazine, limonene, furaneol, cyclotene, decanoic acid, ethyl isovalerate, valeric acid, palmitic acid, ethyl salicylate, geraniol, guaiacol, β-ionone, linalool, linalyl acetate, nerolidol, piperonal, sotolon, α-terpineol, megastigmatrienone, damascenone, and neophytadiene.

15. The flavor molded body according to claim 3, wherein the volatile flavoring agent component is at least one selected from the group consisting of phenethyl acetate, ethyl hexanate, isoamyl acetate, benzyl acetate, ethyl octanate, ethyl oleate, phenethyl alcohol, acetanisole, benzaldehyde, benzyl alcohol, menthol, carvone, cinnamic acid, cinnamaldehyde, cinnamyl alcohol, vanillin, ethyl vanillin, citronellol, 2,5-dimethylpyrazine, limonene, furaneol, cyclotene, decanoic acid, ethyl isovalerate, valeric acid, palmitic acid, ethyl salicylate, geraniol, guaiacol, β-ionone, linalool, linalyl acetate, nerolidol, piperonal, sotolon, α-terpineol, megastigmatrienone, damascenone, and neophytadiene.

16. The flavor molded body according to claim 4, wherein the volatile flavoring agent component is at least one selected from the group consisting of phenethyl acetate, ethyl hexanate, isoamyl acetate, benzyl acetate, ethyl octanate, ethyl oleate, phenethyl alcohol, acetanisole, benzaldehyde, benzyl alcohol, menthol, carvone, cinnamic acid, cinnamaldehyde, cinnamyl alcohol, vanillin, ethyl vanillin, citronellol, 2,5-dimethylpyrazine, limonene, furaneol, cyclotene, decanoic acid, ethyl isovalerate, valeric acid, palmitic acid, ethyl salicylate, geraniol, guaiacol, β-ionone, linalool, linalyl acetate, nerolidol, piperonal, sotolon, α-terpineol, megastigmatrienone, damascenone, and neophytadiene.

17. The flavor molded body according to claim 2, wherein the aerosol source is at least one selected from the group consisting of glycerine and propylene glycol.

18. The flavor molded body according to claim 3, wherein the aerosol source is at least one selected from the group consisting of glycerine and propylene glycol.

19. The flavor molded body according to claim 4, wherein the aerosol source is at least one selected from the group consisting of glycerine and propylene glycol.

20. The flavor molded body according to claim 5, wherein the aerosol source is at least one selected from the group consisting of glycerine and propylene glycol.

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