US 20230037155A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0037155 A1**

Kabirat et al. (43) **Pub. Date: Feb. 2, 2023**

(54) **CONSUMABLE COMPRISING TWO DIFFERENT AEROSOL-GENERATING MATERIALS FOR NON-COMBUSTIBLE AEROSOL PROVISION DEVICE**

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(21) Appl. No.: **17/780,209**

(22) PCT Filed: **Nov. 27, 2020**

(86) PCT No.: **PCT/EP2020/083764**

§ 371 (c)(1),
(2) Date: **May 26, 2022**

(30) **Foreign Application Priority Data**

Nov. 29, 2019 (GB) 1917468.9
Jan. 30, 2020 (GB) 2001312.4

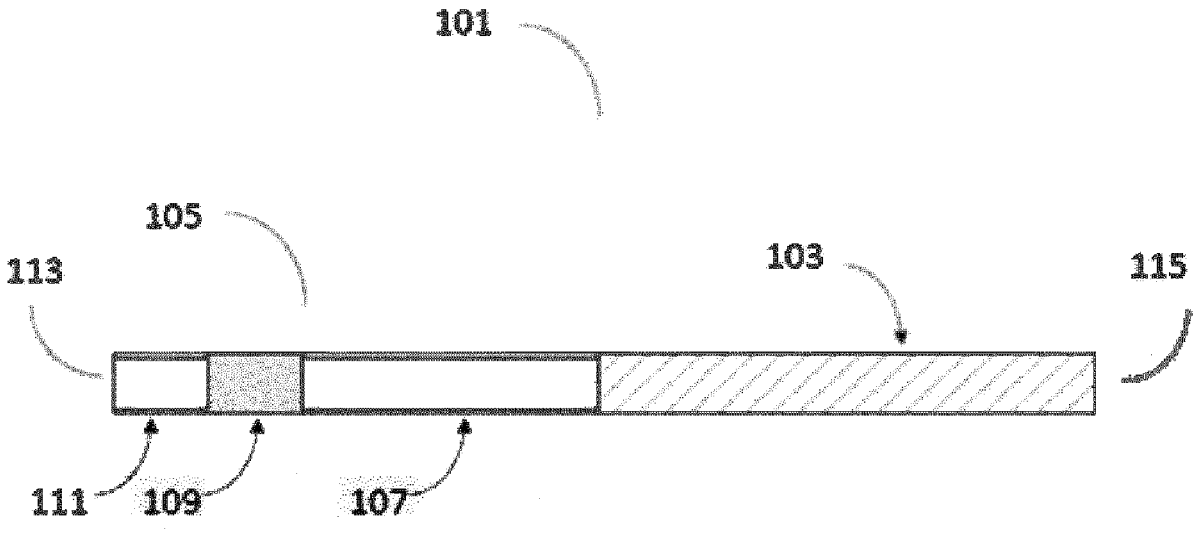
Publication Classification

(51) **Int. Cl.**
A24F 40/20 (2006.01)
A24B 15/167 (2006.01)
A24B 15/30 (2006.01)

(52) **U.S. Cl.**
CPC ***A24F 40/20*** (2020.01); ***A24B 15/167*** (2016.11); ***A24B 15/30*** (2013.01)

(57) **ABSTRACT**

A consumable for use with a non-combustible aerosol provision device including a first aerosol-generating material and a second aerosol-generating material, wherein each of the first and second aerosol-generating materials includes an amorphous solid, the amorphous solid having: 0.5-60 wt % of a gelling agent; 0-80 wt % of an aerosol-former material; and 0-60 wt % of at least one of an active substance, a flavorant and an acid; wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material has a composition different from a composition of the amorphous solid of the second aerosol-generating material.



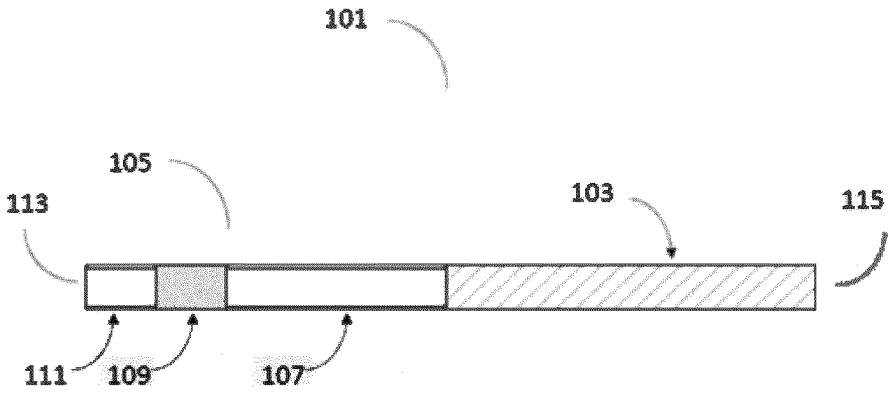


Figure 1

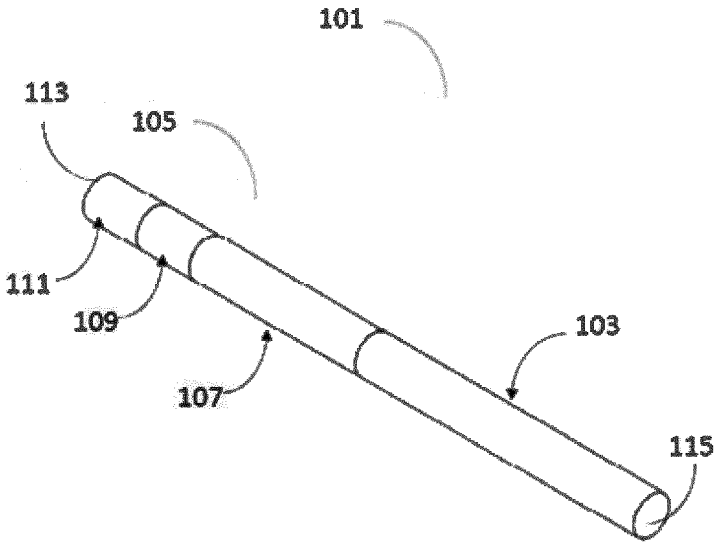


Figure 2

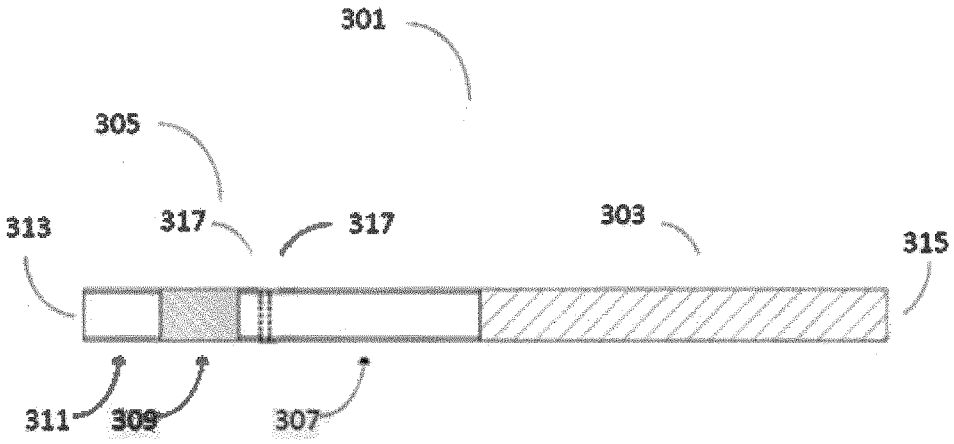


Figure 3

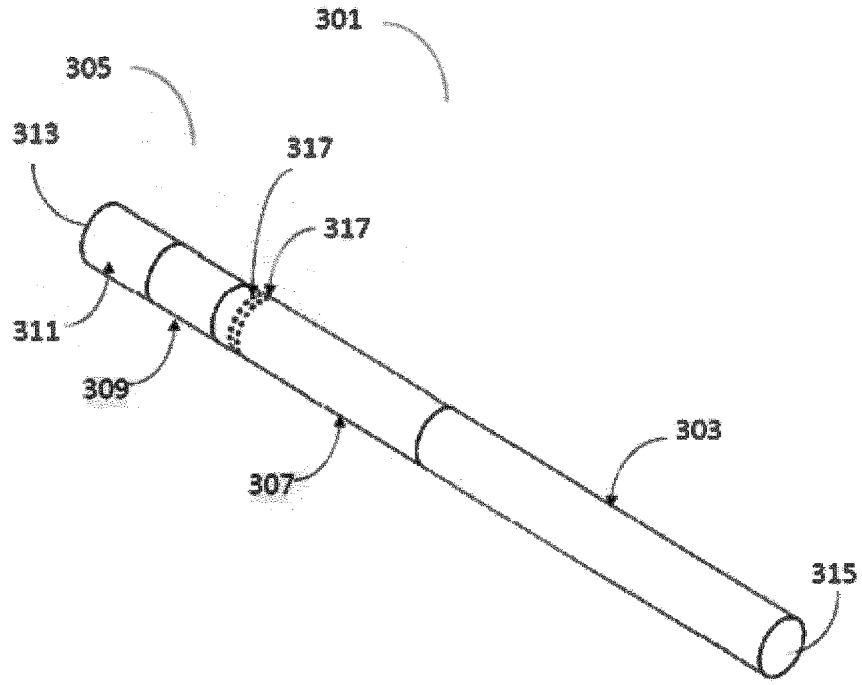


Figure 4

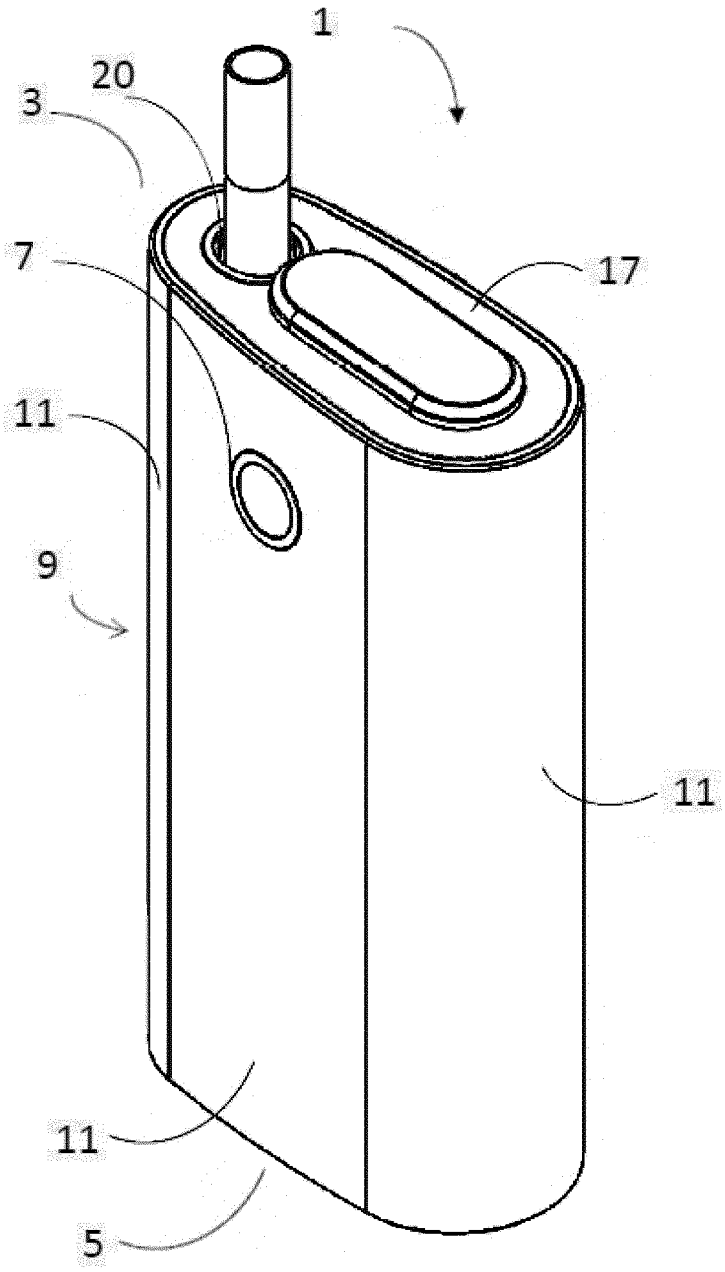


Figure 5

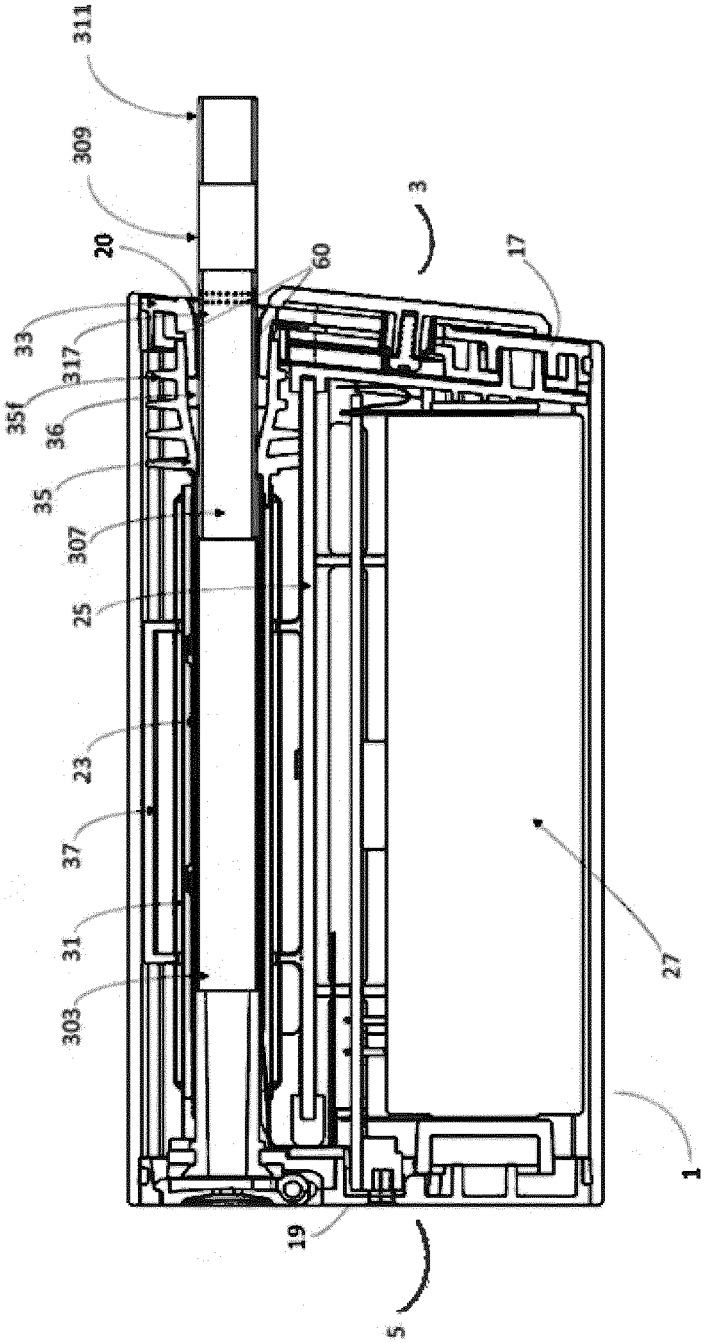


Figure 6

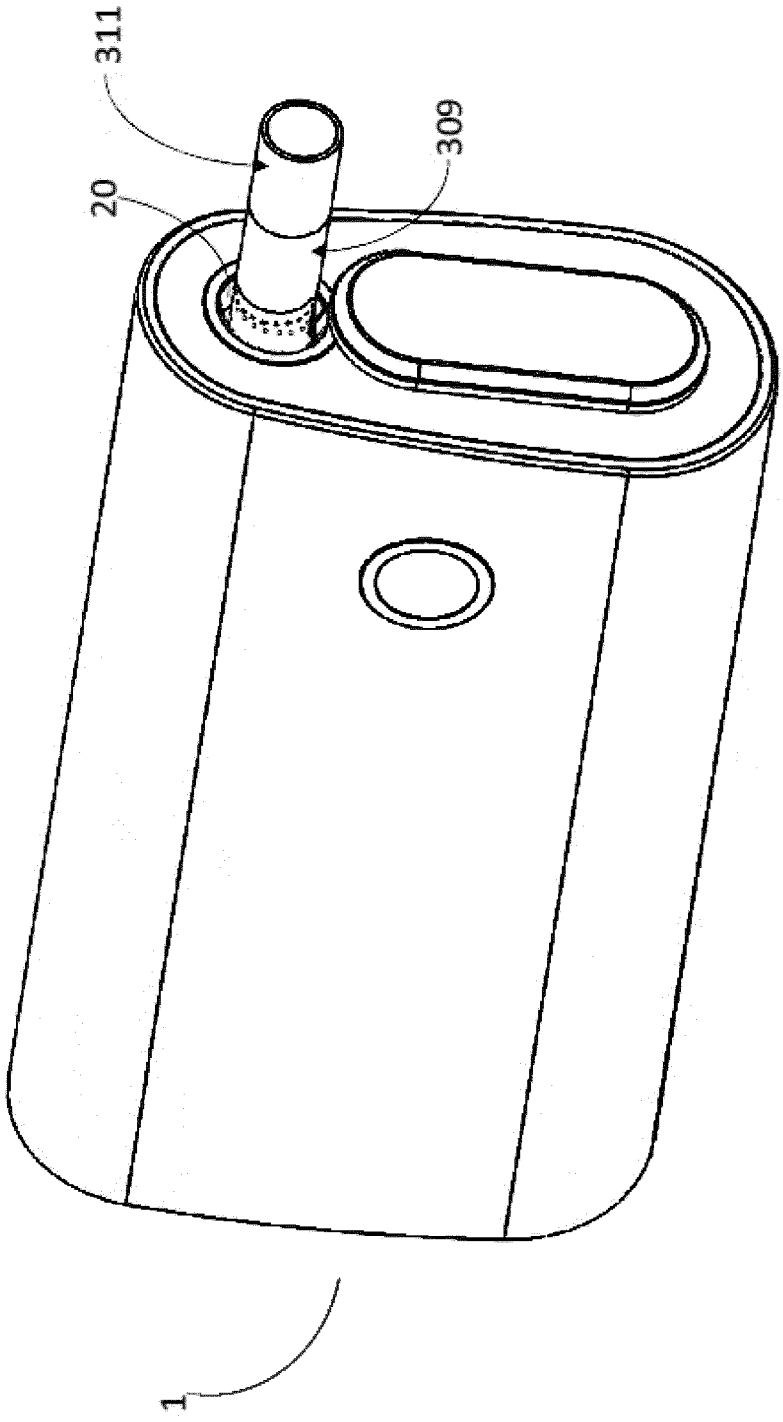


Figure 7

CONSUMABLE COMPRISING TWO DIFFERENT AEROSOL-GENERATING MATERIALS FOR NON-COMBUSTIBLE AEROSOL PROVISION DEVICE

[0001] The present application is a National Phase entry of PCT Application No. PCT/EP2020/083764, filed Nov. 27, 2020, which claims priority from GB Patent

[0002] Application No. 1917468.9, filed Nov. 29, 2019, and GB Patent Application No. 2001312.4, filed Jan. 30, 2020, which are hereby fully incorporated herein by reference.

TECHNICAL FIELD

[0003] The present invention relates to consumables for use with a non-combustible aerosol provision device, the consumables comprising an aerosol-generating material comprising an amorphous solid.

BACKGROUND

[0004] Smoking consumables such as cigarettes, cigars and the like burn tobacco during use to create tobacco smoke. Alternatives to these types of consumables release an inhalable aerosol or vapor by releasing compounds from a substrate material by heating without burning. These may be referred to as non-combustible smoking consumables or aerosol generating assemblies.

[0005] One example of such a product is a heating device which releases compounds by heating, but not burning, a solid aerosol-generating material. This solid aerosol-generating material may, in some cases, comprise a tobacco material. The heating volatilizes at least one component of the material, typically forming an inhalable aerosol. These products may be referred to as heat-not-burn devices, tobacco heating devices or tobacco heating products. Various different arrangements for volatilizing at least one component of the solid aerosol-generating material are known.

[0006] As another example, there are hybrid devices. These comprise a liquid source (which may or may not comprise nicotine) which is vaporized by heating to produce an inhalable vapor or aerosol. The device additionally comprises a solid aerosol-generating material (which may or may not comprise a tobacco material) and components of this material are entrained in the inhalable vapor or aerosol to produce the inhaled medium.

SUMMARY

[0007] The invention provides a consumable for use with a non-combustible aerosol provision device, the consumable comprising:

a first aerosol-generating material; and

a second aerosol-generating material,

wherein each of the first and second aerosol-generating materials comprise an amorphous solid, the amorphous solid comprising:

[0008] 0.5-60 wt % of a gelling agent;

[0009] 0-80 wt % of an aerosol-former; and

[0010] 0-60 wt % of at least one of an active substance, flavorant and an acid;

wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material has a composition different from a composition of the amorphous solid of the second aerosol-generating material.

[0011] The invention also provides a method of manufacturing a consumable for use with a non-combustible aerosol provision device, the method comprising:

[0012] providing a support;

[0013] depositing on the support at least two discrete portions of slurry comprising a gelling agent, an aerosol former material and at least one of an active substance, flavorant and an acid;

[0014] drying the at least two discrete portions of slurry to provide a first aerosol-generating material and a second aerosol-generating material, wherein the first and second aerosol-generating materials are attached to the support;

[0015] forming the consumable;

[0016] wherein each of the first and second aerosol-generating materials comprise an amorphous solid, the amorphous solid comprising:

[0017] 0.5-60 wt % of a gelling agent;

[0018] 0-80 wt % of an aerosol-former material; and

[0019] 0-60 wt % of at least one of an active substance, flavorant and an acid;

wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material has a composition different from a composition of the amorphous solid of the second aerosol-generating material.

[0020] In a further aspect of the invention, there is provided a non-combustible aerosol provision system comprising a consumable of the invention and a non-combustible aerosol provision device, the non-combustible aerosol provision device comprising an aerosol-generation device arranged to generate aerosol from the consumable when the consumable is used with the non-combustible aerosol provision device.

[0021] The invention also pertains to a use of a consumable as described herein in a non-combustible aerosol provision device, wherein the device is arranged to generate aerosol from the consumable when the consumable is used with the non-combustible aerosol provision device.

[0022] Further features and advantages of the invention will become apparent from the following description of preferred embodiments of the invention, given by way of example only, which is made with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] FIG. **1** shows a section view of an example of a consumable.

[0024] FIG. **2** shows a perspective view of the consumable of FIG. **1**.

[0025] FIG. **3** shows a sectional elevation of an example of a consumable.

[0026] FIG. **4** shows a perspective view of the consumable of FIG. **3**.

[0027] FIG. **5** shows a perspective view of an example of a non-combustible aerosol provision system.

[0028] FIG. **6** shows a section view of an example of a non-combustible aerosol provision system.

[0029] FIG. **7** shows a perspective view of an example of a non-combustible aerosol provision system.

DETAILED DESCRIPTION

[0030] As discussed above, one aspect of the invention provides a consumable for use with a non-combustible aerosol provision device, the consumable comprising:

[0031] a first aerosol-generating material; and

[0032] a second aerosol-generating material,

[0033] wherein each of the first and second aerosol-generating materials comprises an amorphous solid, the amorphous solid comprising:

[0034] 0.5-60 wt % of a gelling agent;

[0035] 0-80 wt % of an aerosol-former material; and

[0036] 0-60 wt % of at least one of an active substance, a flavorant and an acid;

[0037] wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material has a composition different from a composition of the amorphous solid of the second aerosol-generating material.

[0038] In this aspect of the invention the percentage by weight of the at least one active substance, flavorant and acid represents the combined total weight of any combination of active substance, flavorant and acid described herein.

[0039] In one embodiment the amorphous solid of the first aerosol-generating material comprises the active substance and the amorphous solid of the second aerosol-generating material comprises the flavorant. In certain such cases, the amorphous solid of the first aerosol-generating material is free from the flavorant and the acid. In some embodiments the amorphous solid of the first aerosol-generating material does not comprise the flavorant contained in the second aerosol-generating material and does not comprise the acid. In other embodiments the amorphous solid of the first aerosol-generating material also comprises the flavorant and/or the acid. In some cases, the amorphous solid of the second aerosol-generating material is free from the active substance and the acid. In some embodiments the amorphous solid of the second aerosol-generating material does not comprise the active substance contained in the first aerosol-generating material and does not comprise the acid. In alternative embodiments, the amorphous solid of the second aerosol-generating material also comprises the active substance and/or the acid.

[0040] In these embodiments, the amorphous solid of the first aerosol-generating material, comprising the active substance comprises:

[0041] 0.5-60 wt % of a gelling agent;

[0042] 5-80 wt % of an aerosol-former material; and

[0043] 0.1-60 wt % of at least one active substance,

wherein these weights are calculated on a dry weight basis.

[0044] In this embodiment, the amorphous solid of the first aerosol-generating material may have the following composition provided as percentages of the total dry weight, i.e., dry weight basis (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 70 wt %, or from about 20 wt % to about 60 wt %, or from about 25 wt % to about 40 wt % (all calculated on a dry weight basis), the active substance in an amount of from about 0.5 wt % to about 50 wt %, or from about 1 wt % to 40 wt %, or from about 2 wt % to about 30 wt %, or from about 5 wt % to about 20 wt %, or from about 2 wt % to about 10 wt %. Suitably, the amorphous solid of the first aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 30 wt % to about 60 wt %; the aerosol-former material in an amount of from about 20 wt % to about 60 wt %; and the active substance in an amount of from about 0.1 wt % to about 10 wt %. In some of these embodiments the amorphous solid of the first aerosol-generating material is free from the flavorant contained in the second aerosol-generating material and the acid. In alternative embodiments, the amorphous solid of the first aerosol-generating material also comprises the flavorant and/or the acid.

[0045] In this embodiment, the amorphous solid of the second aerosol-generating material, comprising the flavorant comprises:

[0046] 0.5-60 wt % of a gelling agent;

[0047] 0-80 wt % of an aerosol-former material; and

[0048] 5-60 wt % of the flavorant,

wherein these weights are calculated on a dry weight basis;

[0049] In this embodiment, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 70 wt %, or from about 20 wt % to about 60 wt %, or from about 25 wt % to about 40 wt % (all calculated on a dry weight basis), flavorant in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to 40 wt %, or from about 25 wt % to about 30 wt %. Suitably, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 30 wt % to about 60 wt %; the aerosol-former material in an amount of from about 10 wt % to about 40 wt %; and the flavorant in an amount of from about 20 wt % to about 50 wt %. In some embodiments the amorphous solid of the second aerosol-generating material is free from the active substance contained in the amorphous solid of the first aerosol-generating material, and the acid. In some embodiments, the amorphous solid of the second aerosol-generating material also comprises the active substance and/or the acid.

[0050] In a further embodiment, the amorphous solid of the first aerosol-generating material comprises the active substance and the amorphous solid of the second aerosol-generating material comprises the acid. In certain such embodiments the amorphous solid of the first aerosol-generating material is free from the flavorant and the acid. In some embodiments, the amorphous solid of the first aerosol-generating material does not comprise the acid contained in the second aerosol-generating material and does not comprise the flavorant. In other embodiments the amorphous solid of the first aerosol-generating material also comprises the acid and/or the flavorant. In certain such embodiments the amorphous solid of the second aerosol-generating material is free from the active substance and the flavorant. In some embodiments, the amorphous solid of the second aerosol-generating material does not comprise the active substance contained in the first aerosol-generating material and does not comprise the flavorant. In other embodiments the amorphous solid of the second aerosol-generating material also comprises the active substance and/or the flavorant.

[0051] In this embodiment, the amorphous solid of the first aerosol-generating material, comprising the active substance comprises:

[0052] 0.5-60 wt % of a gelling agent;

[0053] 5-80 wt % of an aerosol-former material; and

[0054] 0.1-60 wt % of at least one active substance,

wherein these weights are calculated on a dry weight basis.

[0055] In this embodiment, the amorphous solid of the first aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis), the active substance in an amount of from about 1 wt % to about 50 wt %, or from about 2 wt % to 40 wt %, or from about 5 wt % to about 30 wt %. Suitably, the amorphous solid of the first aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 30 wt % to about 60 wt %; the aerosol-former material in an amount of from about 20 wt % to about 60 wt %; and the active substance in an amount of from about 0.1 wt % to about 10 wt %. In some embodiments the amorphous solid of the first aerosol-generating material is free from the acid and the flavorant. In alternative embodiments, the amorphous solid of the first aerosol-generating material also comprises the flavorant and/or the acid.

[0056] In this embodiment, the amorphous solid of the second aerosol-generating material, comprising the acid, comprises:

[0057] 0.5-60 wt % of the gelling agent;

[0058] 5-80 wt % of the aerosol-former material; and

[0059] 0.1 -10 wt % of the acid,

wherein these weights are calculated on a dry weight basis;

[0060] In this embodiment, the amorphous solid of the second aerosol-generating material may have the following composition (calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis), the acid in an amount of from about 0.1 wt % to about 8 wt %, or from about 0.5 wt % to 7 wt %, or from about 1 wt % to about 5 wt %, or form about 1 wt % to about 3 wt %. Suitably, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 40 wt % to about 70 wt %; the aerosol-former material in an amount of from about 20 wt % to about 50 wt %; and the acid in an amount of from about 0.1 wt % to about 5 wt %. In some embodiments the amorphous solid of the second aerosol-generating material is free from the active substance and the flavorant. In alternative embodiments, the amorphous solid of the second aerosol-generating material also comprises the active substance and/or the flavorant.

[0061] In a still further embodiment, the amorphous solid of the first aerosol-generating material comprises the flavorant and the amorphous solid of the second aerosol-generating material comprises the acid. In certain such embodiments, the amorphous solid of the first aerosol-generating material is free from the acid and the active substance. In some embodiments, the amorphous solid of the first aerosol-generating material does not comprise the acid contained in the second aerosol-generating material and does not comprise the active substance. In other embodiments the amorphous solid of the first aerosol-generating material also comprises the acid and/or the active substance. In certain embodiments, the amorphous solid of the second aerosol-generating material is free from the flavorant and the active substance. In some embodiments, the amorphous solid of the second aerosol-generating material does not comprise the flavorant contained in the first aerosol-generating material and does not comprise the active substance. In other embodiments the amorphous solid of the second aerosol-generating material also comprises the flavorant and/or the active substance

[0062] In this embodiment, the amorphous solid of the first aerosol-generating material, comprising the flavorant comprises:

[0063] 0.5-60 wt % of a gelling agent;

[0064] 0-80 wt % of an aerosol-former material; and

[0065] 5-60 wt % of the flavorant,

wherein these weights are calculated on a dry weight basis;

[0066] In this embodiment, the amorphous solid of the first aerosol-generating material may have the following composition (all calculated on a dry weight basis): gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; aerosol-former material in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis), flavorant in an amount of from about 30 wt % to about 60 wt %, or from about 40 wt % to 55 wt %, or from about 45 wt % to about 50 wt %. Suitably, the amorphous solid of the first aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 30 wt % to about 60 wt %; the aerosol-former material in an amount of from about 10 wt % to about 40 wt %; and the flavorant in an amount of from about 10 wt % to about 50 wt %. In some embodiments the amorphous solid of the first aerosol-generating material is free from the acid and the active substance. In alternative embodiments, the amorphous solid of the first aerosol-generating material also comprises the acid and/or the active substance.

[0067] In this embodiment, the amorphous solid of the second aerosol-generating material, comprising the acid comprises:

[0068] 0.5-60 wt % of the gelling agent;

[0069] 5-80 wt % of the aerosol-former material; and

[0070] 0.1 -10 wt % of the acid,

wherein these weights are calculated on a dry weight basis;

[0071] In this embodiment, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis), the acid in an amount of from about 0.1 wt % to about 8 wt %, or from about 0.5 wt % to 7 wt %, or from about 1 wt % to about 5

wt %, or form about 1 wt % to about 3 wt %. Suitably, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 40 wt % to about 70 wt %; the aerosol-former material in an amount of from about 20 wt % to about 50 wt %; and the acid in an amount of from about 0.1 wt % to about 5 wt %. In some embodiments the amorphous solid of the second aerosol-generating material is free from the active substance or the flavorant. In alternative embodiments, the amorphous solid of the second aerosol-generating material also comprises the active substance and/or the flavorant.

[0072] In further embodiments, the amorphous solid of one of the first or second aerosol-generating materials is free from the active substance, the flavorant and the acid. In some embodiments, the amorphous solid of the first aerosol generating material does not comprise the active substance, the flavorant or the acid. In this embodiment the aerosol-generating material which is free from the active substance, flavorant and acid is provided for the purposes of providing a source of aerosol-former material, e.g. a humectant. As such, in this embodiment, the amorphous solid of the aerosol-generating material which is free from the active substance, flavorant and acid comprises at least 5% by weight of aerosol-former material; for example, in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis). In an exemplary embodiment, the first aerosol-generating material comprises:

[0073] 0.5-60 wt % of a gelling agent;

[0074] 5-80 wt % of an aerosol-former material;

[0075] and is free from an active substance, a flavorant and an acid;

[0076] and the second aerosol-generating material comprises 0.1-60 wt % of at least one of an active substance, flavorant and an acid;

[0077] wherein these weights are calculated on a dry weight basis.

[0078] In some such embodiments, the consumable of the invention comprises such a first aerosol-generating material in combination with any other second aerosol-generating material described herein.

[0079] In some embodiments, the amorphous solid of the first and second aerosol-generating materials both comprise an active substance. In some such embodiments, the amorphous solid of the first and second aerosol-generating materials comprise the same active substance. In some such embodiments the active substance is present in different quantities. When used herein "quantity" can mean that the amorphous solid contains 0% of the active substance, in other words the amorphous solid of the first or second aerosol-generating material is free from the active substance present in the amorphous solid of the other aerosol-generating material.

[0080] In some embodiments the amorphous solid of the first and second aerosol-generating materials both comprise an active substance. In some such embodiments, the amorphous solid of the first and second aerosol-generating materials comprise the same active substance, wherein the amorphous solid of the first aerosol-generating material comprises a greater quantity of the active substance than the quantity of the active substance present in the amorphous solid of the second aerosol-generating material. In some embodiments, the amorphous solid of the first and second aerosol-generating materials comprise the same active substance, wherein the amorphous solid of the first aerosol-generating material comprises a lesser quantity of the active substance than the quantity of the active substance present in the amorphous solid of the second aerosol-generating material.

[0081] In some such embodiments, the amorphous solids of both the first and second aerosol-generating materials comprise a quantity of the active substance which is greater than 0.1% (all calculated on a dry weight basis); for example, the amorphous solids of both the first and second aerosol-generating materials comprise at least 0.2, 0.5, 1.0, 1.5 or 2% of the active substance. In an exemplary embodiment the amorphous solid of the first aerosol-generating material comprises from 0-30 wt % of the active substance present therein, and the amorphous solid of the second aerosol-generating material comprises from 31-60 wt % of the active substance present therein. Suitably, the amorphous solid of the first aerosol-generating material comprises from 0-20 wt % of the active substance present therein (for example, 1-15 wt % or 5-10 wt %) and the amorphous solid of the second aerosol-generating material comprises from 30-60 wt % of the active substance present therein (for example, 30-50 wt %, or 40-60 wt %). In some such embodiments the amorphous solid of the first aerosol-generating material comprises the same active substance as the active substance present in the amorphous solid of the second aerosol-generating material. In some such embodiments the amorphous solid of the first aerosol-generating material comprises a different active substance from the active substance present in the amorphous solid of the second aerosol-generating material.

[0082] In such embodiments, two aerosol-generating materials may comprise substantially the same ingredients, except that the quantity of active substance present in each of the two aerosol-generating materials is different. In a non-limiting example, a consumable in accordance with the invention comprises

[0083] a first aerosol-generating material; and

[0084] a second aerosol-generating material,

wherein the first aerosol-generating material comprises an amorphous solid, the amorphous solid comprising

[0085] 0.5-60 wt % of a gelling agent;

[0086] 0-80 wt % of an aerosol-former material; and

[0087] 0-5 wt % of an active substance, wherein these weights are calculated on a dry weight basis;

[0088] and the second aerosol-generating material comprises an amorphous solid, the amorphous solid comprising

[0089] 0.5-60 wt % of a gelling agent;

[0090] 0-80 wt % of an aerosol-former material; and

[0091] 5-10 wt % of an active substance, wherein these weights are calculated on a dry weight basis.

Suitably the amorphous solid of the first aerosol-generating material comprises from 0.1-2 wt % of the active substance contained therein and the amorphous solid of the second aerosol-generating material comprises from 2-10 wt % of the active substance contained therein. Suitably the active substance is nicotine.

[0092] In such embodiments the first and second aerosol-generating material may further comprise flavorant and/or acid in variable quantities. In other embodiments the first and/or second aerosol-generating material is free from (does not comprise) flavorant and/or acid.

[0093] In the above embodiments, suitably, the active substance is nicotine and the amorphous solid of the first aerosol-generating material comprises 0.1-5 wt % of nicotine, for example 0.5-4 wt %, 1-3 wt % or 2-5 wt % of nicotine, and the amorphous solid of the second aerosol-generating material comprises 5-10 wt % of nicotine, for example 6-9 wt % or 7-8 wt % of nicotine, wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material comprises a different quantity of nicotine from the quantity of nicotine contained in the amorphous solid of the second aerosol-generating material.

[0094] In some embodiments the amorphous solid of the first aerosol-generating material comprises a different active substance from the active substance present in the amorphous solid of the second aerosol-generating material.

[0095] In some embodiments, the amorphous solid of the first aerosol-generating material comprises a different flavorant from the flavorant present in the amorphous solid of the second aerosol-generating material.

[0096] In some cases, the amorphous solid of at least one aerosol-generating material mentioned above comprises more than one of a flavorant, active substance and/or acid. For example, in some embodiments the amorphous solid of the first and or/second aerosol-generating material comprises the flavorant and the active substance, but is free from the acid. In other cases the amorphous solids of the first and/or second aerosol-generating materials comprises the acid and the active substance, but are free from the flavorant. In other cases, the amorphous solids of the first and/or second aerosol-generating materials comprise the flavorant and the acid, but are free from the active substance.

[0097] It is also envisaged that the consumable of the invention comprises aerosol-generating materials as discussed above which differ from each other by type of flavorant. In such embodiments the amorphous solid of the first aerosol-generating material comprises a different flavorant from the flavorant contained in the amorphous solid of the second aerosol-generating material. In such embodiments, two aerosol-generating materials (for example the first and second aerosol-generating materials) may comprise substantially the same ingredients, except that the amorphous solid of the first aerosol-generating material comprises a flavorant which is different from a flavorant present in the amorphous solid of the second aerosol generating material. In a non-limiting example, the amorphous solids of two aerosol-generating materials comprise an active substance, acid and flavorant, wherein the flavorant in the amorphous solid of the first aerosol-generating material is different from the flavorant in the amorphous solid of the second aerosol-generating material. In some embodiments, the consumable of the invention may comprise more than two aerosol-generating materials, wherein the amorphous solid of each aerosol-generating material comprises a different flavorant from a flavorant present in at least one other amorphous solid of another aerosol-generating material in the consumable of the invention.

[0098] It is also envisaged that aerosol-generating materials in the consumable of the invention differ from each other by type of active substance. In such embodiments, the amorphous solids of two aerosol-generating materials may comprise substantially the same ingredients, except that the active substance present in the amorphous solid is different. In one embodiment, the amorphous solid of the first aerosol-generating material comprises a different active substance from the active substance present in the amorphous solid of the second aerosol-generating material. In some embodiments, the consumable of the invention comprises more than two aerosol-generating materials, wherein the amorphous solid of each aerosol-generating material comprises a different active substance from the active substance present in the amorphous solid of at least one other aerosol-generating material in the consumable.

[0099] It is also envisaged that aerosol-generating materials in consumables of the invention differ from each other by quantity of flavorant, or acid. In some such embodiments the flavorant of the amorphous solid of the first aerosol-generating material is present in a different quantity from a quantity of the flavorant in the amorphous solid of the second aerosol-generating material. For example, the quantity of flavorant present in the amorphous solid of the first aerosol-generating material is greater than the quantity of the flavorant present in the second aerosol-generating material. In some such embodiments the acid of the amorphous solid of the first aerosol-generating material is present in a different quantity from a quantity of the acid in the amorphous solid of the second aerosol-generating material. For example, the quantity of acid present in the amorphous solid of the first aerosol-generating material is greater than the quantity of the acid present in the second aerosol-generating material.

[0100] It will be appreciated that there are very many combinations of aerosol-generating materials which can be included in a consumable of the present invention. All combinations of active substance, flavorant and acid are included within the scope of the invention.

[0101] In some embodiments the consumable comprises a third aerosol-generating material comprising an amorphous solid, the amorphous solid comprising:

[0102] 0.5-60 wt % of a gelling agent;

[0103] 0-80 wt % of an aerosol-former material; and

[0104] 0-60 wt % of at least one of an active substance, a flavorant and an acid;

[0105] wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the third aerosol-generating material has a different composition from a composition of the amorphous solid of the first aerosol-generating material and/or the second aerosol-generating material.

[0106] In some embodiments the consumable comprises a fourth aerosol-generating material comprising an amorphous solid, the amorphous solid comprising:

[0107] 0.5-60 wt % of a gelling agent;

[0108] 0-80 wt % of an aerosol-former material; and

[0109] 0-60 wt % of at least one of an active substance, a flavorant and an acid;

wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the fourth aerosol-generating material has a different composition from a composition of the amorphous solid of at least one of the first, second or third aerosol-generating materials.

[0110] In some embodiments the consumable comprises more than four aerosol-generating materials having the features described above. Suitably, the amorphous solid of each additional aerosol-generating material has a different composition from the composition of the amorphous solid of at least one other aerosol-generating material contained in the consumable. Indeed, the consumable, in some embodi-

ments, comprises five, six, seven, eight, nine or ten aerosol-generating materials, each of which comprises an amorphous solid having a different composition from an amorphous solid of at least one other aerosol-generating material contained in the consumable. In such embodiments each of the additional aerosol-generating materials comprises an amorphous solid, the amorphous solid comprising:

[0111] 0.5-60 wt % of a gelling agent;

[0112] 0-80 wt % of an aerosol-former material; and

[0113] 0-60 wt % of at least one of an active substance, a flavorant and an acid;

[0114] wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the fifth, sixth, seventh, eighth, ninth or tenth aerosol-generating materials has a composition different from the amorphous solid of at least one other aerosol-generating material contained in the consumable.

[0115] In some cases the amorphous solid of each aerosol-generating material comprises one of a flavorant, acid, active substance, or is free from flavorant, acid and active substance, such that it contributes only humectant when subject to aerosolization.

[0116] In a non-limiting and exemplary embodiment, a consumable in accordance with the invention comprises

[0117] a first aerosol-generating material;

[0118] a second aerosol-generating material;

[0119] a third aerosol-generating material; and

[0120] a fourth aerosol-generating material

[0121] wherein each of the first to fourth aerosol-generating materials comprises an amorphous solid, the amorphous solid comprising:

[0122] 0.5-60 wt % of a gelling agent;

[0123] 0-80 wt % of an aerosol-former; and

[0124] 0-60 wt % of at least one of an active substance, flavorant and an acid;

wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material is free from the active substance, the flavorant and the acid;

the amorphous solid of the second aerosol-generating material comprises the flavorant, but is free from the active substance and the acid;

the amorphous solid of the third aerosol-generating material comprises the active substance, but is free from the flavorant and the acid; and

the amorphous solid of the fourth aerosol-generating material comprises the acid, but is free from the active substance and the flavorant.

[0125] In this embodiment, the amorphous solid of the first aerosol-generating material, free from the flavorant, the active substance and the acid may comprise:

[0126] 0.5-60 wt % of a gelling agent; and

[0127] 5-80 wt % of an aerosol-former material;

wherein these weights are calculated on a dry weight basis;

[0128] In this embodiment, the amorphous solid of the first aerosol-generating material may have the following composition (all calculated on a dry weight basis): gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis).

[0129] In this embodiment, the amorphous solid of the second aerosol-generating material, comprising the flavorant, but free from the active substance and the acid may comprise:

[0130] 0.5-60 wt % of a gelling agent;

[0131] 0-80 wt % of an aerosol-former material; and

[0132] 5-60 wt % of the flavorant,

wherein these weights are calculated on a dry weight basis;

[0133] In this embodiment, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; aerosol-former material in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis), flavorant in an amount of from about 30 wt % to about 60 wt %, or from about 40 wt % to 55 wt %, or from about 45 wt % to about 50 wt %. Suitably, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 30 wt % to about 60 wt %; the aerosol-former material in an amount of from about 10 wt % to about 40 wt %; and the flavorant in an amount of from about 10 wt % to about 50 wt %.

[0134] In this embodiment, the amorphous solid of the third aerosol-generating material, comprising the active substance, and free from the flavorant and acid comprises:

[0135] 0.5-60 wt % of a gelling agent;

[0136] 5-80 wt % of an aerosol-former material; and

[0137] 5-60 wt % of at least one active substance,

wherein these weights are calculated on a dry weight basis.

[0138] In this embodiment, the amorphous solid of the third aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis), the active substance in an amount of from about 30 wt % to about 60 wt %, or from about 40 wt % to 55 wt %, or from about 45 wt % to about 50 wt %. Suitably, the amorphous solid of the first aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 30 wt % to about 60 wt %; the aerosol-former material in an amount of from about 20 wt % to about 60 wt %; and the active substance in an amount of from about 0.1 wt % to about 10 wt %.

[0139] In this embodiment, the amorphous solid of the fourth aerosol-generating material, comprising the acid, but free from the active substance and the flavorant comprises:

[0140] 0.5-60 wt % of the gelling agent;

[0141] 5-80 wt % of the aerosol-former material; and

[0142] 0.1 -10 wt % of the acid,

wherein these weights are calculated on a dry weight basis;

[0143] In this embodiment, the amorphous solid of the fourth aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of

from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis), the acid in an amount of from about 0.1 wt % to about 8 wt %, or from about 0.5 wt % to 7 wt %, or from about 1 wt % to about 5 wt %, or form about 1 wt % to about 3 wt %.

[0144] Suitably, the amorphous solid of the fourth aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 40 wt % to about 70 wt %; the aerosol-former material in an amount of from about 20 wt % to about 50 wt %; and the acid in an amount of from about 0.1 wt % to about 5 wt %.

[0145] Formulations

[0146] The following formulations represent exemplary component amounts of each excipient in the aerosol-generating materials contained in consumables of the invention.

[0147] In embodiments wherein the amorphous solid of the aerosol-generating material in the consumable comprises an active substance, the amorphous solid, in some such embodiments comprises:

[0148] 0.5-60 wt % of a gelling agent;

[0149] 0-80 wt % of an aerosol-former material; and

[0150] 0.1-60 wt % of at least one active substance,

wherein these weights are calculated on a dry weight basis.

[0151] In these embodiments, the amorphous solid of the aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 70 wt %, or from about 20 wt % to about 60 wt %, or from about 25 wt % to about 40 wt % (all calculated on a dry weight basis), the active substance in an amount of from about 0.5 wt % to about 50 wt %, or from about 1 wt % to 40 wt %, or from about 2 wt % to about 30 wt %, or from about 5 wt % to about 20 wt %, or from about 2 wt % to about 10 wt %. Suitably, the amorphous solid of the aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 30 wt % to about 60 wt %; the aerosol-former material in an amount of from about 20 wt % to about 60 wt %; and the active substance in an amount of from about 0.1 wt % to about 10 wt %.

[0152] In embodiments wherein the amorphous solid of the aerosol-generating material in the consumable comprises flavorant, in some such embodiments the amorphous solid comprises:

[0153] 0.5-60 wt % of a gelling agent;

[0154] 0-80 wt % of an aerosol-former material; and

[0155] 5-60 wt % of the flavorant,

wherein these weights are calculated on a dry weight basis;

[0156] In these embodiments, the amorphous solid the aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 70 wt %, or from about 20 wt % to about 60 wt %, or from about 25 wt % to about 40 wt % (all calculated on a dry weight basis), flavorant in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to 40 wt %, or from about 25 wt % to about 30 wt %. Suitably, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 30 wt % to about 60 wt %; the aerosol-former material in an amount of from about 10 wt % to about 40 wt %; and the flavorant in an amount of from about 20 wt % to about 50 wt %.

[0157] In embodiments wherein the amorphous solid of the aerosol-generating material in the consumable comprises an acid, in some such embodiments the amorphous solid comprises:

[0158] 0.5-60 wt % of the gelling agent;

[0159] 5-80 wt % of the aerosol-former material; and

[0160] 0.1 -10 wt % of the acid,

wherein these weights are calculated on a dry weight basis;

[0161] In these embodiments, the amorphous solid may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 5 wt % to about 40 wt %, or about 10 wt % to 30 wt %, or about 15 wt % to about 25 wt %; the aerosol-former material in an amount of from about 10 wt % to about 50 wt %, or from about 20 wt % to about 40 wt %, or from about 25 wt % to about 35 wt % (all calculated on a dry weight basis), the acid in an amount of from about 0.1 wt % to about 8 wt %, or from about 0.5 wt % to 7 wt %, or from about 1 wt % to about 5 wt %, or form about 1 wt % to about 3 wt %. Suitably, the amorphous solid of the second aerosol-generating material may have the following composition (all calculated on a dry weight basis): the gelling agent in an amount of from about 40 wt % to about 70 wt %; the aerosol-former material in an amount of from about 20 wt % to about 50 wt %; and the acid in an amount of from about 0.1 wt % to about 5 wt %.

[0162] Amorphous Solid Composition

[0163] The following discussion of the amorphous solid composition applies independently to the amorphous solid in each of the aerosol-generating materials present in the consumable of the invention.

[0164] In some cases, the amorphous solid may have a thickness of about 0.015 mm to about 1.0 mm. Suitably, the thickness may be in the range of about 0.05 mm, 0.1 mm or 0.15 mm to about 0.5 mm, 0.3 mm or 0.2 mm. The inventors have found that an amorphous solid having a thickness of 0.2 mm is particularly suitable. In some embodiments the amorphous solid may have a thickness of about 0.1-0.2 mm. The amorphous solid may comprise more than one layer, and the thickness described herein refers to the aggregate thickness of those layers.

[0165] The inventors have established that if the amorphous solid is too thick, then heating efficiency is compromised. This adversely affects the power consumption in use. Conversely, if the amorphous solid is too thin, it is difficult to manufacture and handle; a very thin material is harder to cast and may be fragile, compromising aerosol formation in use.

[0166] The inventors have established that the amorphous solid thicknesses stipulated herein optimise the material properties in view of these competing considerations. The thickness stipulated herein is a mean thickness for the material. In some cases, the amorphous solid thickness may vary by no more than 25%, 20%, 15%, 10%, 5% or 1%.

[0167] In some cases, the amorphous solids may be heated to generate aerosol once. In some cases, the amorphous solids may be heated to generate aerosol more than once, such as twice or three times.

[0168] Where an amorphous solid is to be heated more than once a thicker amorphous solid may be used. For example, in some embodiments the thickness may be 0.2-0.5 mm.

[0169] In some cases, the amorphous solid may comprise 1-60 wt % of a gelling agent wherein these weights are calculated on a dry weight basis.

[0170] In some embodiments, the gelling agent comprises a hydrocolloid. In some embodiments, the gelling agent comprises one or more compounds selected from the group comprising alginates, pectins, starches (and derivatives), celluloses (and derivatives such as methylcellulose, hydroxypropyl cellulose, and carboxymethyl cellulose (CMC)), gums, silica or silicones compounds, clays, polyvinyl alcohol and combinations thereof. For example, in some embodiments, the gelling agent comprises one or more of alginates, pectins, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethylcellulose, pullulan, xanthan gum guar gum, carrageenan, agarose, acacia gum, fumed silica, PDMS, sodium silicate, kaolin and polyvinyl alcohol. In some cases, the gelling agent comprises alginate and/or pectin, and may be combined with a setting agent (such as a calcium source) during formation of the amorphous solid. In some cases, the amorphous solid may comprise a calcium-crosslinked alginate and/or a calcium-crosslinked pectin.

[0171] In some cases, the gelling agent may be combined with a setting agent (such as a calcium source) during formation of the amorphous solid.

[0172] In examples, the setting agent comprises or consists of calcium acetate, calcium formate, calcium carbonate, calcium hydrogencarbonate, calcium chloride, calcium lactate, or a combination thereof. In some examples, the setting agent comprises or consists of calcium formate and/or calcium lactate. In particular examples, the setting agent comprises or consists of calcium formate. The inventors have identified that, typically, employing calcium formate as a setting agent results in an amorphous solid having a greater tensile strength and greater resistance to elongation.

[0173] The total amount of the setting agent, such as a calcium source, may be 0.5-5 wt % (calculated on a dry weight basis). Suitably, the total amount may be from about 1 wt %, 2.5 wt % or 4 wt % to about 4.8 wt % or 4.5 wt %. The inventors have found that the addition of too little setting agent may result in an amorphous solid which does not stabilise the amorphous solid components and results in these components dropping out of the amorphous solid. The inventors have found that the addition of too much setting agent results in an amorphous solid that is very tacky and consequently has poor handleability.

[0174] When the amorphous solid does not contain tobacco, a higher amount of setting agent may need to be applied. In some cases the total amount of setting agent may therefore be from 0.5-12 wt % such as 5-10 wt %, calculated on a dry weight basis. Suitably, the total amount may be from about 5 wt %, 6 wt % or 7 wt % to about 12 wt % or 10 wt %. In this case the amorphous solid will not generally contain any tobacco.

[0175] In some embodiments, the gelling agent comprises alginate, and the alginate is present in the amorphous solid in an amount of from 10-30 wt % of the amorphous solid (calculated on a dry weight basis). In some embodiments, alginate is the only gelling agent present in the amorphous solid. In other embodiments, the gelling agent comprises alginate and at least one further gelling agent, such as pectin.

[0176] In some embodiments the gelling agent comprises a mixture of alginate and carboxymethylcellulose (CMC). Suitably the gelling agent comprises a greater quantity of CMC than alginate; for example in some cases the ratio of CMC to alginate is about 5:1, about 3:1, about 2:1, or about 1.5:1; for example is in the range of 5:1-1.5:1.

[0177] In some embodiments the amorphous solid may include gelling agent comprising carrageenan.

[0178] In some embodiments, the gelling agent may comprise one or more compounds selected from cellulosic gelling agents, non-cellulosic gelling agents, guar gum, acacia gum and mixtures thereof.

[0179] In some embodiments, the cellulosic gelling agent is selected from the group consisting of: hydroxymethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethylcellulose (CMC), hydroxypropyl methylcellulose (HPMC), methyl cellulose, ethyl cellulose, cellulose acetate (CA), cellulose acetate butyrate (CAB), cellulose acetate propionate (CAP) and combinations thereof.

[0180] In some embodiments, the gelling agent comprises (or is) one or more of hydroxyethyl cellulose, hydroxypropyl cellulose, hydroxypropyl methylcellulose (HPMC), carboxymethylcellulose, guar gum, or acacia gum.

[0181] In some embodiments, the gelling agent comprises (or is) one or more non-cellulosic gelling agents, including, but not limited to, agar, xanthan gum, gum Arabic, guar gum, locust bean gum, pectin, carrageenan, starch, alginate, and combinations thereof. In preferred embodiments, the non-cellulose based gelling agent is alginate or agar.

[0182] Suitably, the amorphous solid may comprise from about 5 wt %, 10 wt %, 15 wt %, or 20 wt % to about 80 wt %, 70 wt %, 60 wt %, 55 wt %, 50 wt %, 45 wt % 40 wt %, or 35 wt % of an aerosol-former material (all calculated on a dry weight basis). The aerosol-former material may act as a plasticiser. For example, the amorphous solid may comprise 10-60 wt %, 15-50 wt % or 20-40 wt % of an aerosol-former material. In some cases, the aerosol-former material comprises one or more compound selected from erythritol, propylene glycol, glycerol, triacetin, sorbitol and xylitol. In some cases, the aerosol-former material comprises, consists essentially of or consists of glycerol. The inventors have established that if the content of the aerosol-former material is too high, the amorphous solid may absorb water resulting in a material that does not create an appropriate consumption experience in use. The inventors have established that if the aerosol-former material content is too low, the amorphous solid may be brittle and easily broken.

[0183] In some embodiments, the aerosol former comprises one or more polyhydric alcohols, such as propylene glycol, triethylene glycol, 1,3-butanediol and glycerin; esters of polyhydric alcohols, such as glycerol mono-, di- or triacetate; and/or aliphatic esters of mono-, di- or polycarboxylic acids, such as dimethyl dodecanedioate and dimethyl tetradecanedioate.

[0184] In embodiments in which the amorphous solid comprises a flavorant, suitably, the amorphous solid comprises up to about 60 wt %, 50 wt %, 40 wt %, 30 wt %, 20 wt %, 10 wt % or 5 wt % of the flavorant. In some cases, the amorphous solid may comprise at least about 0.5 wt %, 1 wt %, 2 wt %, 5 wt % 10 wt %, 20 wt % or 30 wt % of the flavorant (all calculated on a dry weight basis). For example, the amorphous solid may comprise 0.1-60 wt %, 1-60 wt %,

5-60 wt %, 10-60 wt %, 20-50 wt % or 30-40 wt % of the flavorant. In some cases, the flavorant (if present) comprises, consists essentially of or consists of menthol. In some cases, the amorphous solid is free from flavorant.

[0185] In embodiments in which an aerosol-generating material of the invention comprises an active substance, in some cases, the amorphous solid comprises a tobacco material and/or nicotine. For example, the amorphous solid may comprise powdered tobacco and/or nicotine and/or a tobacco extract. In some cases, the amorphous solid may comprise from about 1 wt %, 5 wt %, 10 wt %, 15 wt %, 20 wt % or 25 wt % to about 70 wt %, 50 wt %, 45 wt % or 40 wt % (calculated on a dry weight basis) of an active substance. In some cases, the amorphous solid may comprise from about 1 wt %, 5 wt %, 10 wt %, 15 wt %, 20 wt % or 25 wt % to about 70 wt %, 60 wt %, 50 wt %, 45 wt % or 40 wt % (calculated on a dry weight basis) of a tobacco material and/or nicotine.

[0186] In embodiments in which the aerosol-generating material comprises an active substance such as tobacco extract; in some cases, the amorphous solid may comprise 5-60 wt % (calculated on a dry weight basis) of tobacco extract. In some cases, the amorphous solid may comprise from about 5 wt %, 10 wt %, 15 wt %, 20 wt % or 25 wt % to about 55 wt %, 50 wt %, 45 wt % or 40 wt % (calculated on a dry weight basis) tobacco extract. For example, the amorphous solid may comprise 5-60 wt %, 10-55 wt % or 25-55 wt % of tobacco extract. The tobacco extract may comprise nicotine at a concentration such that the amorphous solid comprises 1 wt % 1.5 wt %, 2 wt % or 2.5 wt % to about 6 wt %, 5 wt %, 4.5 wt % or 4 wt % (calculated on a dry weight basis) of nicotine. In some cases, there may be no nicotine in the amorphous solid other than that which results from the tobacco extract.

[0187] In some embodiments the amorphous solid comprises no tobacco material but does comprise nicotine. In some such cases, the amorphous solid may comprise from about 1 wt %, 2 wt %, 3 wt % or 4 wt % to about 20 wt %, 15 wt %, 10 wt % or 5 wt % (calculated on a dry weight basis) of nicotine. For example, the amorphous solid may comprise 1-20 wt % or 2-5 wt % of nicotine.

[0188] In embodiments where the amorphous solid comprises an acid, the amorphous solid may comprise 1-20 wt %, 5-15 wt % or 8-12 wt % (calculated on a dry weight basis) of acid, for example, 1 wt %, 2 wt %, 3 wt % or 4 wt % to about 20 wt %, 15 wt %, 10 wt % or 5 wt % (calculated on a dry weight basis) of acid.

[0189] Without wishing to be bound by theory, it is believed that including an acid in the amorphous solid protonates the nicotine and results in an aerosol which some users of smoking devices find more satisfying.

[0190] The aerosol-generating material or amorphous solid may comprise an acid.

[0191] The inclusion of an acid is particularly preferred in embodiments in which the aerosol-generating material or amorphous solid comprises nicotine. In such embodiments, the presence of an acid may stabilise dissolved species in the slurry from which the aerosol-generating material or amorphous solid is formed. The presence of the acid may reduce or substantially prevent evaporation of nicotine during drying of the slurry, thereby reducing loss of nicotine during manufacturing.

[0192] In some such embodiments, the acid may contain an acidic functional group which has a pK_a value ranging from 2 to 6, for example ranging from 3 to 6 or ranging from 4 to 5, when measured at 25° C.

[0193] In some such embodiments, the acid may have a boiling point ranging from 70° C. to 450° C., for example, ranging from 100° C. to 320° C.

[0194] In some such embodiments, the amorphous solid comprises from 1-20 wt % of acid, wherein the acid has a functional group which has a pK_a value ranging from 2 to 6 when measured at 25° C. and wherein the acid has a boiling point ranging from 70° C. to 350° C.

[0195] In some such embodiments, the acid may be an organic acid.

[0196] In some of these embodiments, the acid may be at least one of a monoprotic acid, diprotic acid and triprotic acid.

[0197] In some such embodiments, the acid may contain at least one carboxyl functional group.

[0198] In some such embodiments, the acid may be at least one of an alpha-hydroxy acid, carboxylic acid, dicarboxylic acid, tricarboxylic acid and keto acid.

[0199] In some such embodiments, the acid may be an alpha-keto acid.

[0200] In some such embodiments, the acid may be at least one of succinic acid, lactic acid, benzoic acid, citric acid, tartaric acid, fumaric acid, levulinic acid, acetic acid, malic acid, formic acid, sorbic acid, benzoic acid, propanoic and pyruvic acid.

[0201] Suitably the acid is lactic acid. In other embodiments, the acid is benzoic acid.

[0202] In other embodiments the acid may be an inorganic acid. In some of these embodiments the acid may be a mineral acid. In some such embodiments, the acid may be at least one of sulphuric acid, hydrochloric acid, boric acid and phosphoric acid.

[0203] In some embodiments, the acid is levulinic acid.

[0204] In embodiments where the amorphous solid comprises an acid, the amorphous solid may comprise 1 wt %, 2 wt %, 3 wt % or 4 wt % to about 20 wt %, 15 wt %, 10 wt % or 5 wt % (calculated on a dry weight basis) of an organic acid.

[0205] In embodiments where the amorphous solid comprises an acid, the amorphous solid may comprise 1 wt %, 2 wt %, 3 wt % or 4 wt % to about 20 wt %, 15 wt %, 10 wt % or 5 wt % (calculated on a dry weight basis) of an acid comprising a carboxyl functional group.

[0206] In embodiments where the amorphous solid comprises an acid, the amorphous solid may comprise 1 wt %, 2 wt %, 3 wt % or 4 wt % to about 20 wt %, 15 wt %, 10 wt % or 5 wt % (calculated on a dry weight basis) of an acid containing an acidic functional group which has a pK_a value of between 2 and 6, when measured at 25° C.

[0207] In certain embodiments, the aerosol-generating material or amorphous solid comprises a gelling agent comprising a cellulosic gelling agent and/or a non-cellulosic gelling agent, an active substance and an acid.

[0208] The amorphous solid may, in some cases, be a hydrogel and comprises less than about 20 wt %, 15 wt %, 12 wt % or 10 wt % of water calculated on a wet weight basis (WWB). In some cases, the amorphous solid may comprise at least about 1 wt %, 2 wt % or 5 wt % of water (WWB). The amorphous solid comprises from about 1 wt % to about 15 wt % water, or from about 5 wt % to about 15 wt % calculated on a wet weight basis. Suitably, the water content of the amorphous solid may be from about 5 wt %,

7 wt % or 9 wt % to about 15 wt %, 13 wt % or 1 1 wt % (WWB), most suitably about 10 wt %.

[0209] The amorphous solid may be made from a gel, and this gel may additionally comprise a solvent, included at 0.1-50 wt %. However, the inventors have established that the inclusion of a solvent in which the flavorant is soluble may reduce the gel stability and the flavorant may crystallise out of the gel. As such, in some cases, the gel does not include a solvent in which the flavorant is soluble.

[0210] In some cases, the amorphous solid comprises from 1-60 wt % of a filler, for example, 5-50 wt %, 10-40 wt % or 15-30 wt % of a filler. In some such cases the amorphous solid comprises at least 1 wt % of a filler, for example, at least 5 wt %, at least 10 wt %, at least 20 wt % at least 30 wt %, at least 40 wt %, or at least 50 wt % of a filler.

[0211] In some embodiments, the amorphous solid comprises less than 60 wt % of a filler, such as from 1 wt % to 60 wt %, or 5 wt % to 50 wt %, or 5 wt % to 30 wt %, or 10 wt % to 20 wt %.

[0212] In other embodiments, the amorphous solid comprises less than 20 wt %, suitably less than 10 wt % or less than 5 wt % of a filler. In some cases, the amorphous solid comprises less than 1 wt % of a filler, and in some cases, is free from filler.

[0213] The filler, if present, may comprise one or more inorganic filler materials, such as calcium carbonate, perlite, vermiculite, diatomaceous earth, colloidal silica, magnesium oxide, magnesium sulphate, magnesium carbonate, and suitable inorganic sorbents, such as molecular sieves. The filler may comprise one or more organic filler materials such as wood pulp, cellulose and cellulose derivatives (such as methylcellulose, hydroxypropyl cellulose, and carboxymethyl cellulose (CMC)). In some cases, the amorphous solid comprises less than 1 wt % of a filler, and in some cases, comprises no filler. In particular, in some cases, the amorphous solid comprises no calcium carbonate such as chalk.

[0214] In particular embodiments which include filler, the filler is fibrous. For example, the filler may be a fibrous organic filler material such as wood pulp, hemp fibre, cellulose or cellulose derivatives (such as methylcellulose, hydroxypropyl cellulose, and carboxymethyl cellulose (CMC)). Without wishing to be bound by theory, it is believed that including fibrous filler in an amorphous solid may increase the tensile strength of the material.

[0215] In some embodiments, the amorphous solid does not comprise tobacco fibres. In particular embodiments, the amorphous solid does not comprise fibrous material.

[0216] In some embodiments, the aerosol-generating material does not comprise tobacco fibres. In particular embodiments, the aerosol-generating material does not comprise fibrous material.

[0217] In some embodiments, the aerosol-generating material does not comprise tobacco fibres. In particular embodiments, the aerosol-generating material does not comprise fibrous material.

[0218] In some embodiments, the consumable does not comprise tobacco fibres. In particular embodiments, the consumable does not comprise fibrous material.

[0219] The aerosol-generating material comprising the amorphous solid may have any suitable area density, such as from 30 g/m^2 to 120 g/m^2. In some embodiments, aerosol generating material may have an area density of from about 30 to 70 g/m^2, or about 40 to 60 g/m^2. In some embodiments, the amorphous solid may have an area density of from about 80 to 120 g/m^2, or from about 70 to 110 g/m^2, or particularly from about 90 to 110 g/m^2.

[0220] In some examples, the amorphous solid in sheet form may have a tensile strength of from around 200 N/m to around 900 N/m. In some examples, such as where the amorphous solid does not comprise a filler, the amorphous solid may have a tensile strength of from 200 N/m to 400 N/m, or 200 N/m to 300 N/m, or about 250 N/m. In some examples, such as where the amorphous solid comprises a filler, the amorphous solid may have a tensile strength of from 600 N/m to 900 N/m, or from 700 N/m to 900 N/m, or around 800 N/m.

[0221] The amorphous solid may comprise a colorant. The addition of a colorant may alter the visual appearance of the amorphous solid. The presence of colorant in the amorphous solid may enhance the visual appearance of the amorphous solid and the aerosol-generating material. By adding a colorant to the amorphous solid, the amorphous solid may be color-matched to other components of the aerosol-generating material or to other components of an article comprising the amorphous solid.

[0222] A variety of colorants may be used depending on the desired colour of the amorphous solid. The colour of amorphous solid may be, for example, white, green, red, purple, blue, brown or black. Other colours are also envisaged. Natural or synthetic colorants, such as natural or synthetic dyes, food-grade colorants and pharmaceutical-grade colorants may be used. In certain embodiments, the colorant is caramel, which may confer the amorphous solid with a brown appearance. In such embodiments, the color of the amorphous solid may be similar to the color of other components (such as tobacco material) in an aerosol-generating material comprising the amorphous solid. In some embodiments, the addition of a colorant to the amorphous solid renders it visually indistinguishable from other components in the aerosol-generating material.

The colorant may be incorporated during the formation of the amorphous solid (e.g. when forming a slurry comprising the materials that form the amorphous solid) or it may be applied to the amorphous solid after its formation (e.g. by spraying it onto the amorphous solid).

[0223] Method of Manufacturing a Consumable

The invention also provides a method of manufacturing a consumable for use with a non-combustible aerosol provision device, the method comprising:

[0224] providing a support;

[0225] depositing on the support at least two discrete portions of slurry comprising a gelling agent, an aerosol former and at least one of an active substance, flavorant and an acid;

[0226] drying the at least two discrete portions of slurry to provide a first aerosol-generating material and a second aerosol-generating material, wherein the first and second aerosol-generating materials are attached to the support;

[0227] forming the consumable;

[0228] wherein each of the first and second aerosol-generating materials comprise an amorphous solid, the amorphous solid comprising:

[0229] 0.5-60 wt % of a gelling agent;

[0230] 0-80 wt % of an aerosol-former material; and

[0231] 0-60 wt % of at least one of an active substance, flavorant and an acid;

wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material has a composition different from a composition of the amorphous solid of the second aerosol-generating material.

[0232] The embodiments described throughout the application in relation to the consumable of the present invention also apply mutatis mutandis to the method of manufacturing a consumable.

[0233] The present invention also includes the use of a consumable as described throughout the present application in a non-combustible aerosol provision device, wherein the device is arranged to generate aerosol from the consumable when the consumable is used with the non-combustible aerosol provision device.

[0234] The embodiments described throughout the application in relation to the consumable of the present invention also apply mutatis mutandis to the use of the consumable.

[0235] Consumable

[0236] In some cases, the aerosol-generating materials (for example, the first and second aerosol-generating materials) are attached to a support. Advantageously, the support is a planar support. In some cases, the support may be substantially or wholly impermeable to gas and/or aerosol. This prevents aerosol or gas passage through the support, thereby controlling the flow and ensuring good delivery to the user. This can also be used to prevent condensation or other deposition in use of the gas/aerosol on, for example, the surface of a heater provided in non-combustible aerosol provision system. Thus, consumption efficiency and hygiene can be improved in some cases.

[0237] Thus, in certain embodiments the invention provides a consumable for use within a non-combustible aerosol provision system, the consumable comprising:

[0238] a support;

[0239] a first aerosol-generating material attached to the support; and

[0240] a second aerosol-generating material attached to the support,

[0241] wherein each aerosol-generating material comprises an amorphous solid, the amorphous solid comprising:

[0242] 0.5-60 wt % of a gelling agent;

[0243] 0-80 wt % of an aerosol-former material; and

[0244] 0-60 wt % of at least one of an active substance, flavorant and an acid;

wherein these weights are calculated on a dry weight basis; and

wherein the amorphous solid of the first aerosol-generating material has a composition different from the amorphous solid of the second aerosol-generating material.

[0245] The support may be at least partially porous in the region of a surface abutting the amorphous solid. The inventors have found that such a support is particularly suitable for the present invention; the porous section of the support abuts the amorphous solid and forms a strong bond. The amorphous solid is formed by drying a gel and, without being limited by theory, it is thought that a slurry from which the amorphous solid is formed partially impregnates porous material of the support so that when the amorphous solid sets and forms cross-links, the support is partially bound into the amorphous solid. This provides a strong binding between the amorphous solid and the support.

[0246] Additionally, surface roughness may contribute to the strength of bond between the amorphous solid and the support. The inventors have found that the paper roughness (for the surface abutting the aerosol-generating material) may suitably be in the range of 50-1000 Bekk seconds, suitably 50-150 Bekk seconds, suitably 100 Bekk seconds (measured over an air pressure interval of 50.66-48.00 kPa). (A Bekk smoothness tester is an instrument used to determine the smoothness of a paper surface, in which air at a specified pressure is leaked between a smooth glass surface and a paper sample, and the time (in seconds) for a fixed volume of air to seep between these surfaces is the "Bekk smoothness".)

[0247] Conversely, the surface of the support facing away from the amorphous solid may be arranged in contact with a heater, and a smoother surface may provide more efficient heat transfer. Thus, in some cases, the support is disposed so as to have a rougher side abutting the amorphous solid and a smoother side facing away from the amorphous solid.

In one particular case, the support may itself be a laminate structure. For example, it may comprise a cardboard-backed foil; a cardboard layer abuts the amorphous solid and the properties discussed in the previous paragraphs are afforded by this abutment. A foil backing is substantially impermeable, providing control of theaerosol flow path. A metal foil backing may also serve to conduct heat to the amorphous solid.

[0248] In another case, a foil layer of the cardboard-backed foil abuts the amorphous solid. The foil is substantially impermeable, thereby preventing water provided in the amorphous solid to be absorbed into the paper which could weaken its structural integrity.

[0249] In some cases, the support is formed from or comprises metal foil, such as aluminium foil. A metallic support may allow for better conduction of thermal energy to the amorphous solid. Additionally, or alternatively, a metal foil may function as a susceptor in an induction heating system. In particular embodiments, the support comprises a metal foil layer and a support layer, such as cardboard. In these embodiments, the metal foil layer may have a thickness of less than 20 μm, such as from about 1 μm to about 10 μm, suitably about 5 μm.

[0250] The consumable may alternatively be referred to herein as a cartridge. The consumable may be adapted for use in a THP, a hybrid device or another aerosol generating device. In some cases, the consumable may be in the form of a rod. In some cases, the consumable may additionally comprise a filter and/or cooling element, as described previously. In some cases, the consumable may be circumscribed by a wrapping material such as paper.

[0251] The consumable may additionally comprise ventilation apertures. These may be provided in the sidewall of the consumable. In some cases, the ventilation apertures may be provided in the filter and/or cooling element. These apertures may allow cool air to be drawn into the consumable during use, which can mix with the heated volatilized components thereby cooling the aerosol.

[0252] The ventilation enhances the generation of visible heated volatilized components from the consumable when it is heated in use. The heated volatilized components are made visible by the process of cooling the heated volatilized components such that supersaturation of the heated volatilized components occurs. The heated volatilized components then undergo droplet formation, otherwise known as nucleation, and eventually the size of the aerosol particles of the heated volatilized components increases by further conden-

sation of the heated volatilized components and by coagulation of newly formed droplets from the heated volatilized components.

[0253] In some cases, the ratio of the cool air to the sum of the heated volatilized components and the cool air, known as the ventilation ratio, is at least 15%. A ventilation ratio of 15% enables the heated volatilized components to be made visible by the method described above. The visibility of the heated volatilized components enables the user to identify that the volatilized components have been generated and adds to the sensory experience of the smoking experience.

[0254] In another example, the ventilation ratio is between 50% and 85% to provide additional cooling to the heated volatilized components. In some cases, the ventilation ratio may be at least 60% or 65%.

[0255] Referring to FIGS. **1** and **2**, there are shown a partially cut-away section view and a perspective view of an example of an aerosol-generating consumable **101**. The consumable **101** is adapted for use with a device having a power source and a heater. The consumable **101** of this embodiment is particularly suitable for use with the device **51** shown in FIGS. **5** to **7**, described below. In use, the consumable **101** may be removably inserted into the device shown in FIG. **5** at an insertion point **20** of the device **51**.

[0256] The consumable **101** of one example is in the form of a substantially cylindrical rod that includes a body of aerosol-generating material **103** and a filter assembly **105** in the form of a rod. The aerosol-generating material comprises the amorphous solid material described herein. In some embodiments, it may be included in sheet form. In some embodiments it may be included in the form of a shredded sheet. In some embodiments, the aerosol-generating material described herein may be incorporated in sheet form and in shredded form.

[0257] The filter assembly **105** includes three segments, a cooling segment **107**, a filter segment **109** and a mouth end segment **111**. The consumable **101** has a first end **113**, also known as a mouth end or a proximal end and a second end **115**, also known as a distal end. The body of aerosol-generating material **103** is located towards the distal end **115** of the consumable **101**. In one example, the cooling segment **107** is located adjacent the body of aerosol-generating material **103** between the body of aerosol generating material **103** and the filter segment **109**, such that the cooling segment **107** is in an abutting relationship with the aerosol-generating material **103** and the filter segment **103**. In other examples, there may be a separation between the body of aerosol-generating material **103** and the cooling segment **107** and between the body of aerosol-generating material **103** and the filter segment **109**. The filter segment **109** is located in between the cooling segment **107** and the mouth end segment **111**.

[0258] The mouth end segment **111** is located towards the proximal end **113** of the consumable **101**, adjacent the filter segment **109**. In one example, the filter segment **109** is in an abutting relationship with the mouth end segment **111**. In one embodiment, the total length of the filter assembly **105** is between 37 mm and 45 mm, more preferably, the total length of the filter assembly **105** is 41 mm.

[0259] In one example, the rod of aerosol-generating material **103** is between 34 mm and 50 mm in length, suitably between 38 mm and 46 mm in length, suitably 42 mm in length.

[0260] In one example, the total length of the consumable **101** is between 71 mm and 95 mm, suitably between 79 mm and 87 mm, suitably 83 mm.

[0261] An axial end of the body of aerosol-generating material **103** is visible at the distal end **115** of the consumable **101**. However, in other embodiments, the distal end **115** of the consumable **101** may comprise an end member (not shown) covering the axial end of the body of aerosol-generating material **103**.

[0262] The body of aerosol-generating material **103** is joined to the filter assembly **105** by annular tipping paper (not shown), which is located substantially around the circumference of the filter assembly **105** to surround the filter assembly **105** and extends partially along the length of the body of aerosol-generating material **103**. In one example, the tipping paper is made of 58 GSM standard tipping base paper. In one example the tipping paper has a length of between 42 mm and 50 mm, suitably of 46 mm.

[0263] In one example, the cooling segment **107** is an annular tube and is located around and defines an air gap within the cooling segment. The air gap provides a chamber for heated volatilized components generated from the body of aerosol-generating material **103** to flow. The cooling segment **107** is hollow to provide a chamber for aerosol accumulation yet rigid enough to withstand axial compressive forces and bending moments that might arise during manufacture and whilst the consumable **101** is in use during insertion into the device **51**. In one example, the thickness of the wall of the cooling segment **107** is approximately 0.29 mm.

[0264] The cooling segment **107** provides a physical displacement between the aerosol-generating material **103** and the filter segment **109**. The physical displacement provided by the cooling segment **107** will provide a thermal gradient across the length of the cooling segment **107**. In one example the cooling segment **107** is configured to provide a temperature differential of at least 40 degrees Celsius between a heated volatilized component entering a first end of the cooling segment **107** and a heated volatilized component exiting a second end of the cooling segment **107**. In one example the cooling segment **107** is configured to provide a temperature differential of at least 60 degrees Celsius between a heated volatilized component entering a first end of the cooling segment **107** and a heated volatilized component exiting a second end of the cooling segment **107**. This temperature differential across the length of the cooling element **107** protects the temperature sensitive filter segment **109** from the high temperatures of the aerosol-generating material **103** when it is heated by the device **51**. If the physical displacement was not provided between the filter segment **109** and the body of aerosol-generating material **103** and the heating elements of the device **51**, then the temperature sensitive filter segment may **109** become damaged in use, so it would not perform its required functions as effectively.

[0265] In one example the length of the cooling segment **107** is at least 15 mm. In one example, the length of the cooling segment **107** is between 20 mm and 30 mm, more particularly 23 mm to 27 mm, more particularly 25 mm to 27 mm, suitably 25 mm.

[0266] The cooling segment **107** is made of paper, which means that it is comprised of a material that does not generate compounds of concern, for example, toxic compounds when in use adjacent to the heater of the device **51**.

In one example, the cooling segment **107** is manufactured from a spirally wound paper tube which provides a hollow internal chamber yet maintains mechanical rigidity. Spirally wound paper tubes are able to meet the tight dimensional accuracy requirements of high-speed manufacturing processes with respect to tube length, outer diameter, roundness and straightness.

[0267] In another example, the cooling segment **107** is a recess created from stiff plug wrap or tipping paper. The stiff plug wrap or tipping paper is manufactured to have a rigidity that is sufficient to withstand the axial compressive forces and bending moments that might arise during manufacture and whilst the consumable **101** is in use during insertion into the device **51**.

[0268] The filter segment **109** may be formed of any filter material sufficient to remove one or more volatilized compounds from heated volatilized components from the aerosol-generating material. In one example the filter segment **109** is made of a mono-acetate material, such as cellulose acetate. The filter segment **109** provides cooling and irritation-reduction from the heated volatilized components without depleting the quantity of the heated volatilized components to an unsatisfactory level for a user.

[0269] In some embodiments, a capsule (not illustrated) may be provided in filter segment **109**. It may be disposed substantially centrally in the filter segment **109**, both across the filter segment **109** diameter and along the filter segment **109** length. In other cases, it may be offset in one or more dimension. The capsule may in some cases, where present, contain a volatile component such as a flavorant or aerosol generating agent.

[0270] The density of the cellulose acetate tow material of the filter segment **109** controls the pressure drop across the filter segment **109**, which in turn controls the draw resistance of the consumable **101**. Therefore the selection of the material of the filter segment **109** is important in controlling the resistance to draw of the consumable **101**. In addition, the filter segment performs a filtration function in the consumable **101**.

[0271] In one example, the filter segment **109** is made of a 8Y15 grade of filter tow material, which provides a filtration effect on the heated volatilized material, whilst also reducing the size of condensed aerosol droplets which result from the heated volatilized material.

[0272] The presence of the filter segment **109** provides an insulating effect by providing further cooling to the heated volatilized components that exit the cooling segment **107**. This further cooling effect reduces the contact temperature of the user's lips on the surface of the filter segment **109**.

[0273] In one example, the filter segment **109** is between 6 mm to 10 mm in length, suitably 8 mm.

[0274] The mouth end segment **111** is an annular tube and is located around and defines an air gap within the mouth end segment **111**. The air gap provides a chamber for heated volatilized components that flow from the filter segment **109**. The mouth end segment **111** is hollow to provide a chamber for aerosol accumulation yet rigid enough to withstand axial compressive forces and bending moments that might arise during manufacture and whilst the consumable is in use during insertion into the device **51**. In one example, the thickness of the wall of the mouth end segment **111** is approximately 0.29 mm. In one example, the length of the mouth end segment **111** is between 6 mm to 10 mm, suitably 8 mm.

[0275] The mouth end segment **111** may be manufactured from a spirally wound paper tube which provides a hollow internal chamber yet maintains critical mechanical rigidity. Spirally wound paper tubes are able to meet the tight dimensional accuracy requirements of high-speed manufacturing processes with respect to tube length, outer diameter, roundness and straightness.

[0276] The mouth end segment **111** provides the function of preventing any liquid condensate that accumulates at the exit of the filter segment **109** from coming into direct contact with a user.

[0277] It should be appreciated that, in one example, the mouth end segment **111** and the cooling segment **107** may be formed of a single tube and the filter segment **109** is located within that tube separating the mouth end segment **111** and the cooling segment **107**.

[0278] Referring to FIGS. **3** and **4**, there are shown a partially cut-away section and perspective views of an example of a consumable **301**. The reference signs shown in FIGS. **3** and **4** are equivalent to the reference signs shown in FIGS. **1** and **2**, but with an increment of **200**.

[0279] In the example of the consumable **301** shown in FIGS. **3** and **4**, a ventilation region **317** is provided in the consumable **301** to enable air to flow into the interior of the consumable **301** from the exterior of the consumable **301**. In one example the ventilation region **317** takes the form of one or more ventilation holes **317** formed through the outer layer of the consumable **301**. The ventilation holes may be located in the cooling segment **307** to aid with the cooling of the consumable **301**. In one example, the ventilation region **317** comprises one or more rows of holes, and preferably, each row of holes is arranged circumferentially around the consumable **301** in a cross-section that is substantially perpendicular to a longitudinal axis of the consumable **301**.

[0280] In one example, there are between one to four rows of ventilation holes to provide ventilation for the consumable **301**. Each row of ventilation holes may have between **12** to **36** ventilation holes **317**. The ventilation holes **317** may, for example, be between 100 to 500 μm in diameter. In one example, an axial separation between rows of ventilation holes **317** is between 0.25 mm and 0.75 mm, suitably 0.5 mm.

[0281] In one example, the ventilation holes **317** are of uniform size. In another example, the ventilation holes **317** vary in size. The ventilation holes can be made using any suitable technique, for example, one or more of the following techniques: laser technology, mechanical perforation of the cooling segment **307** or pre-perforation of the cooling segment **307** before it is formed into the consumable **301**. The ventilation holes **317** are positioned so as to provide effective cooling to the consumable **301**.

[0282] In one example, the rows of ventilation holes **317** are located at least 11 mm from the proximal end **313** of the consumable, suitably between 17 mm and 20 mm from the proximal end **313** of the consumable **301**. The location of the ventilation holes **317** is positioned such that user does not block the ventilation holes **317** when the consumable **301** is in use.

[0283] Providing the rows of ventilation holes between **17** mm and **20** mm from the proximal end **313** of the consumable **301** enables the ventilation holes **317** to be located outside of the device **51**, when the consumable **301** is fully inserted in the device **51**, as can be seen in FIGS. **6** and **7**. By locating the ventilation holes outside of the device,

non-heated air is able to enter the consumable **301** through the ventilation holes from outside the device **51** to aid with the cooling of the consumable **301**.

[0284] The length of the cooling segment **307** is such that the cooling segment **307** will be partially inserted into the device **51**, when the consumable **301** is fully inserted into the device **51**. The length of the cooling segment **307** provides a first function of providing a physical gap between the heater arrangement of the device **51** and the heat sensitive filter arrangement **309**, and a second function of enabling the ventilation holes **317** to be located in the cooling segment, whilst also being located outside of the device **51**, when the consumable **301** is fully inserted into the device **51**. As can be seen from FIGS. **6** and **7**, the majority of the cooling element **307** is located within the device **51**. However, there is a portion of the cooling element **307** that extends out of the device **51**. It is in this portion of the cooling element **307** that extends out of the device **51** in which the ventilation holes **317** are located.

[0285] Referring now to FIGS. **5** to **7** in more detail, there is shown an example of a device **51** arranged to heat aerosol-generating material to volatilise at least one component of said aerosol-generating material, typically to form an aerosol which can be inhaled. The device **51** is a heating device which releases compounds by heating, but not burning, the aerosol-generating material.

[0286] A first end **53** is sometimes referred to herein as the mouth or proximal end **53** of the device **51** and a second end **55** is sometimes referred to herein as the distal end **55** of the device **51**. The device **51** has an on/off button **57** to allow the device **51** as a whole to be switched on and off as desired by a user.

[0287] The device **51** comprises a housing **59** for locating and protecting various internal components of the device **51**. In the example shown, the housing **59** comprises a uni-body sleeve **11** that encompasses the perimeter of the device **51**, capped with a top panel **17** which defines generally the 'top' of the device **51** and a bottom panel **19** which defines generally the 'bottom' of the device **51**. In another example the housing comprises a front panel, a rear panel and a pair of opposite side panels in addition to the top panel **17** and the bottom panel **19**.

[0288] The top panel **17** and/or the bottom panel **19** may be removably fixed to the uni-body sleeve **11**, to permit easy access to the interior of the device **51**, or may be "permanently" fixed to the uni-body sleeve **11**, for example to deter a user from accessing the interior of the device **51**. In an example, the panels **17** and **19** are made of a plastics material, including for example glass-filled nylon formed by injection moulding, and the uni-body sleeve **11** is made of aluminium, though other materials and other manufacturing processes may be used.

[0289] The top panel **17** of the device **51** has an opening **20** at the mouth end **53** of the device **51** through which, in use, the consumable **101**, **301** including the aerosol-generating material may be inserted into the device **51** and removed from the device **51** by a user.

[0290] The housing **59** has located or fixed therein a heater arrangement **23**, control circuitry **25** and a power source **27**. In this example, the heater arrangement **23**, the control circuitry **25** and the power source **27** are laterally adjacent (that is, adjacent when viewed from an end), with the control circuitry **25** being located generally between the heater arrangement **23** and the power source **27**, though other locations are possible.

[0291] The control circuitry **25** may include a controller, such as a microprocessor arrangement, configured and arranged to control the heating of the aerosol-generating material in the consumable **101**, **301** as discussed further below.

[0292] The power source **27** may be for example a battery, which may be a rechargeable battery or a non-rechargeable battery. Examples of suitable batteries include for example a lithium-ion battery, a nickel battery (such as a nickel-cadmium battery), an alkaline battery and/or the like. The battery **27** is electrically coupled to the heater arrangement **23** to supply electrical power when required and under control of the control circuitry **25** to heat the aerosol-generating material in the consumable (as discussed, to volatilize the aerosol-generating material without causing the aerosol-generating material to burn).

[0293] An advantage of locating the power source **27** laterally adjacent to the heater arrangement **23** is that a physically large power source **25** may be used without causing the device **51** as a whole to be unduly lengthy. As will be understood, in general a physically large power source **25** has a higher capacity (that is, the total electrical energy that can be supplied, often measured in Amp-hours or the like) and thus the battery life for the device **51** can be longer.

[0294] In one example, the heater arrangement **23** is generally in the form of a hollow cylindrical tube, having a hollow interior heating chamber **29** into which the consumable **101**, **301** comprising the aerosol-generating material is inserted for heating in use. Different arrangements for the heater arrangement **23** are possible. For example, the heater arrangement **23** may comprise a single heating element or may be formed of plural heating elements aligned along the longitudinal axis of the heater arrangement **23**. The or each heating element may be annular or tubular, or at least part-annular or part-tubular around its circumference. In an example, the or each heating element may be a thin film heater. In another example, the or each heating element may be made of a ceramics material. Examples of suitable ceramics materials include alumina and aluminium nitride and silicon nitride ceramics, which may be laminated and sintered. Other heating arrangements are possible, including for example inductive heating, infrared heater elements, which heat by emitting infrared radiation, or resistive heating elements formed by for example a resistive electrical winding.

[0295] In one particular example, the heater arrangement **23** is supported by a stainless steel support tube and comprises a polyimide heating element. The heater arrangement **23** is dimensioned so that substantially the whole of the body of aerosol-generating material **103**, **303** of the consumable **101**, **301** is inserted into the heater arrangement **23** when the consumable **101**, **301** is inserted into the device **51**.

[0296] The or each heating element may be arranged so that selected zones of the aerosol-generating material can be independently heated, for example in turn (over time, as discussed above) or together (simultaneously) as desired.

[0297] The heater arrangement **23** in this example is surrounded along at least part of its length by a thermal insulator **31**. The insulator **31** helps to reduce heat passing from the heater arrangement **23** to the exterior of the device

51. This helps to keep down the power requirements for the heater arrangement **23** as it reduces heat losses generally. The insulator **31** also helps to keep the exterior of the device **51** cool during operation of the heater arrangement **23**. In one example, the insulator **31** may be a double-walled sleeve which provides a low pressure region between the two walls of the sleeve. That is, the insulator **31** may be for example a "vacuum" tube, i.e. a tube that has been at least partially evacuated so as to minimize heat transfer by conduction and/or convection. Other arrangements for the insulator **31** are possible, including using heat insulating materials, including for example a suitable foam-type material, in addition to or instead of a double-walled sleeve.

[0298] The housing **59** may further comprises various internal support structures **37** for supporting all internal components, as well as the heating arrangement **23**.

[0299] The device **51** further comprises a collar **33** which extends around and projects from the opening **20** into the interior of the housing **59** and a generally tubular chamber **35** which is located between the collar **33** and one end of the vacuum sleeve **31**. The chamber **35** further comprises a cooling structure **35***f*, which in this example, comprises a plurality of cooling fins **35***f* spaced apart along the outer surface of the chamber **35**, and each arranged circumferentially around outer surface of the chamber **35**. There is an air gap **36** between the hollow chamber **35** and the consumable **101**, **301** when it is inserted in the device **51** over at least part of the length of the hollow chamber **35**. The air gap **36** is around all of the circumference of the consumable **101**, **301** over at least part of the cooling segment **307**.

[0300] The collar **33** comprises a plurality of ridges **60** arranged circumferentially around the periphery of the opening **20** and which project into the opening **20**. The ridges **60** take up space within the opening **20** such that the open span of the opening **20** at the locations of the ridges **60** is less than the open span of the opening **20** at the locations without the ridges **60**. The ridges **60** are configured to engage with a consumable **101**, **301** inserted into the device to assist in securing it within the device **51**. Open spaces (not shown in the Figures) defined by adjacent pairs of ridges **60** and the consumable **101**, **301** form ventilation paths around the exterior of the consumable **101**, **301**. These ventilation paths allow hot vapors that have escaped from the consumable **101**, **301** to exit the device **51** and allow cooling air to flow into the device **51** around the consumable **101**, **301** in the air gap **36**.

[0301] In operation, the consumable **101**, **301** is removably inserted into an insertion point **20** of the device **51**, as shown in FIGS. **5** to **7**. Referring particularly to FIG. **6**, in one example, the body of aerosol-generating material **103**, **303**, which is located towards the distal end **115**, **315** of the consumable **101**, **301**, is entirely received within the heater arrangement **23** of the device **51**. The proximal end **113**, **313** of the consumable **101**, **301** extends from the device **51** and acts as a mouthpiece assembly for a user.

[0302] In operation, the heater arrangement **23** will heat the consumable **101**, **301** to volatilize at least one component of the aerosol-generating material from the body of aerosol-generating material **103**, **303**.

[0303] The primary flow path for the heated volatilized components from the body of aerosol-generating material **103**, **303** is axially through the consumable **101**, **301**, through the chamber inside the cooling segment **107**, **307**, through the filter segment **109**, **309**, through the mouth end segment **111**, **313** to the user. In one example, the temperature of the heated volatilized components that are generated from the body of aerosol generating material is between 60° C. and 250° C., which may be above the acceptable inhalation temperature for a user. As the heated volatilized component travels through the cooling segment **107**, **307**, it will cool and some volatilized components will condense on the inner surface of the cooling segment **107**, **307**.

[0304] In the examples of the consumable **301** shown in FIGS. **3** and **4**, cool air will be able to enter the cooling segment **307** via the ventilation holes **317** formed in the cooling segment **307**. This cool air will mix with the heated volatilized components to provide additional cooling to the heated volatilized components.

[0305] Advantageously, the consumable of the invention allows each of the first and second aerosol-generating materials to be aerosolized separately. In other words, the generation of aerosol from each aerosol-generating material may be under separate control, such that the generation of aerosol produced by each aerosol-generating material can be varied individually. In an embodiment in which a non-combustible aerosol provision system uses heat to generate aerosol, each aerosol-generating material in the consumable could be under the control of a separate heat generation arrangement. In such an embodiment, the temperature of each aerosol-generating material may be controlled separately to stimulate the release of a desired quantity of aerosol from each aerosol-generating material. In this way, the non-combustible aerosol provision system is adapted to allow a user to aerosolize the first and/or second aerosol-generating material according to personal preference. As a non-limiting example provided to illustrate the invention; the amorphous solid of the first aerosol-generating material may comprise a flavorant, and no active substance, whilst the amorphous solid of the second aerosol-generating material may comprise active substance and no flavorant; if the user would like to inhale flavor only, then the non-combustible aerosol provision system could allow this; for example, the user could program the non-combustible aerosol provision device to aerosolize the first aerosol-generating material (comprising the flavorant), but not aerosolize the second aerosol-generating material (comprising the active substance). It will be appreciated that such a system could be further configured to allow a user to obtain a wide variety of smoking experiences according to preference.

[0306] In some embodiments, the aerosol-generating materials are be arranged in the consumable such that they may be stimulated to generate aerosol under separate control from each other, when used within a non-combustible aerosol provision system.

[0307] An advantage of the consumable of the invention is that one production line or facility can produce a single type of consumable, which is capable of providing a variety of experiences according to user preference.

[0308] In some cases, a heater (for example a heater in the non-combustible aerosol provision system) may heat, without burning, the amorphous solids to between 120° C. and 350° C. in use. In some cases the heater, may heat, without burning, the amorphous solids to between 140° C. and 250° C. in use.

[0309] The heater may comprise one or more electrically resistive heaters, including for example one or more nichrome resistive heater(s) and/or one or more ceramic heater(s). The one or more heaters may comprise one or

more induction heaters which includes an arrangement comprising one or more susceptors which may form a chamber into which an article comprising aerosol-generating material is inserted or otherwise located in use. Alternatively or in addition, one or more susceptors may be provided in the aerosol-generating material. Other heating arrangements may also be used.

EXEMPLARY EMBODIMENTS

[0310] The following embodiments are provided by way of example, to better explain how the present invention may be implemented.

[0311] In one embodiment, there is provided a consumable for use with a non-combustible aerosol provision device, the consumable comprising:

[0312] a first aerosol-generating material; and

[0313] a second aerosol-generating material,

[0314] wherein the first aerosol-generating material comprises an amorphous solid, the amorphous solid comprising:

[0315] 30-60 wt % of a gelling agent;

[0316] 15-60 wt % of an aerosol-former material; and

[0317] 1-10 wt % of an active substance; and

[0318] wherein the second aerosol-generating material comprises an amorphous solid, the amorphous solid comprising:

[0319] 30-60 wt % of a gelling agent;

[0320] 10-40 wt % of an aerosol-former material; and

[0321] 20-50 wt % of a flavorant;

[0322] wherein these weights are calculated on a dry weight basis; and

[0323] wherein the amorphous solid of the first aerosol-generating material has a composition different from the amorphous solid of the second aerosol-generating material.

[0324] In a further embodiment there is provided a consumable for use in a non-combustible aerosol provision device, the consumable comprising:

[0325] a support

[0326] a first aerosol-generating material attached to the support; and

[0327] a second aerosol-generating material attached to the support,

[0328] wherein each of the first and second aerosol-generating materials comprises an amorphous solid, the amorphous solid comprising:

[0329] 30-60 wt % of a gelling agent;

[0330] 15-60 wt % of an aerosol-former material; and

[0331] 0-60 wt % of at least one of nicotine, flavorant and acid, wherein the acid has a boiling point ranging from 100° C. to 350° C. and/or an acidic functional group which has a PK_a value ranging from 3 to 7 when measured at 25° C.;

[0332] wherein these weights are calculated on a dry weight basis; and

[0333] wherein the amorphous solid of the first aerosol-generating material has a composition different from the amorphous solid of the second aerosol-generating material.

[0334] In a further embodiment there is provided a consumable for use in a non-combustible aerosol provision device, the consumable comprising:

[0335] a support

[0336] a first aerosol-generating material attached to the support; and

[0337] a second aerosol-generating material attached to the support,

[0338] wherein each of the first and second aerosol-generating materials comprises an amorphous solid, the amorphous solid comprising:

[0339] 30-60 wt % of a gelling agent;

[0340] 15-60 wt % of an aerosol-former material; and

[0341] 0-60 wt % of at least one of nicotine, flavorant and benzoic acid and/or lactic acid;

[0342] wherein these weights are calculated on a dry weight basis; and

[0343] wherein the amorphous solid of the first aerosol-generating material has a composition different from the amorphous solid of the second aerosol-generating material.

[0344] Exemplary and non-limiting formulations for four aerosol-generating materials comprising an amorphous solid, which may be included in a consumable of the invention are provided in the table below.

	First aerosol-generating material (Active substance)	Second aerosol-generating material (Flavorant)	Third aerosol-generating material (Aerosol-former material)	Fourth aerosol-generating material (Acid)
Total Gelling agent	43%	43%	43%	56%
Alginate	12%	12%	12%	24%
CMC	31%	31%	31%	32%
Filler	0%	0%	0%	0%
Calcium	1%	1%	1%	2%
Flavorant	0%	37%	0%	0%
Glycerol	48%	19%	56%	39%
Nicotine	6%	0%	0%	0%
Benzoic acid	2%	0%	0%	3%
	100%	100%	100%	100%

[0345] Definitions

Delivery System

[0346] As used herein, the term "delivery system" is intended to encompass systems that deliver at least one substance to a user, and includes:

[0347] combustible aerosol provision systems, such as cigarettes, cigarillos, cigars, and tobacco for pipes or for roll-your-own or for make-your-own cigarettes (whether based on tobacco, tobacco derivatives, expanded tobacco, reconstituted tobacco, tobacco substitutes or other smokable material);

[0348] non-combustible aerosol provision systems that release compounds from an aerosol-generating material without combusting the aerosol-generating material, such as electronic cigarettes, tobacco heating products, and hybrid systems to generate aerosol using a combination of aerosol-generating materials; and

[0349] aerosol-free delivery systems that deliver the at least one substance to a user orally, nasally, transdermally or in another way without forming an aerosol, including but not limited to, lozenges, gums, patches, articles comprising inhalable powders, and oral products such as oral tobacco which includes snus or moist snuff, wherein the at least one substance may or may not comprise nicotine.

Non-Combustible Aerosol Provision System

[0350] According to the present disclosure, a "non-combustible" aerosol provision system is one where a constituent aerosol-generating material of the aerosol provision system (or component thereof) is not combusted or burned in order to facilitate delivery of at least one substance to a user.

[0351] In some embodiments, the delivery system is a non-combustible aerosol provision system, such as a powered non-combustible aerosol provision system.

[0352] In some embodiments, the non-combustible aerosol provision system is an electronic cigarette, also known as a vaping device or electronic nicotine delivery system (END), although it is noted that the presence of nicotine in the aerosol-generating material is not a requirement.

[0353] In some embodiments, the non-combustible aerosol provision system is an aerosol-generating material heating system, also known as a heat-not-burn system. An example of such a system is a tobacco heating system.

[0354] In some embodiments, the non-combustible aerosol provision system is a hybrid system to generate aerosol using a combination of aerosol-generating materials, one or a plurality of which may be heated. Each of the aerosol-generating materials may be, for example, in the form of a solid, liquid or gel and may or may not contain nicotine. In some embodiments, the hybrid system comprises a liquid or gel aerosol-generating material and a solid aerosol-generating material. The solid aerosol-generating material may comprise, for example, tobacco or a non-tobacco product.

[0355] Typically, the non-combustible aerosol provision system may comprise a non-combustible aerosol provision device and a consumable for use with the non-combustible aerosol provision device.

[0356] In some embodiments, the disclosure relates to consumables comprising aerosol-generating material and configured to be used with non-combustible aerosol provision devices. These consumables are sometimes referred to as articles throughout the disclosure.

[0357] In some embodiments, the non-combustible aerosol provision system, such as a non-combustible aerosol provision device thereof, may comprise a power source and a controller. The power source may, for example, be an electric power source or an exothermic power source. In some embodiments, the exothermic power source comprises a carbon substrate which may be energized so as to distribute power in the form of heat to an aerosol-generating material or to a heat transfer material in proximity to the exothermic power source.

[0358] In some embodiments, the non-combustible aerosol provision system may comprise an area for receiving the consumable, an aerosol generator, an aerosol generation area, a housing, a mouthpiece, a filter and/or an aerosol-modifying agent.

[0359] In some embodiments, the consumable for use with the non-combustible aerosol provision device may comprise aerosol-generating material, an aerosol-generating material storage area, an aerosol-generating material transfer component, an aerosol generator, an aerosol generation area, a housing, a wrapper, a filter, a mouthpiece, and/or an aerosol-modifying agent.

Active Substance

[0360] In some embodiments, the substance to be delivered comprises an active substance.

[0361] The active substance as used herein may be a physiologically active material, which is a material intended to achieve or enhance a physiological response. The active substance may for example be selected from nutraceuticals, nootropics, psychoactives. The active substance may be naturally occurring or synthetically obtained. The active substance may comprise for example nicotine, caffeine, taurine, theine, vitamins such as B6 or B12 or C, melatonin, cannabinoids, or constituents, derivatives, or combinations thereof. The active substance may comprise one or more constituents, derivatives or extracts of tobacco, cannabis or another botanical.

In some embodiments, the active substance comprises nicotine. In some embodiments, the active substance comprises caffeine, melatonin or vitamin B12.

In some embodiments, the active substance comprises one or more cannabinoid compounds selected from the group consisting of: cannabidiol (CBD), tetrahydrocannabinol (THC), tetrahydrocannabinolic acid (THCA), cannabidiolic acid (CBDA), cannabinol (CBN), cannabigerol (CBG), cannabichromene (CBC), cannabicyclol (CBL), cannabivarin (CBV), tetrahydrocannabivarin (THCV), cannabidivarin (CBDV), cannabichromevarin (CBCV), cannabigerovarin (CBGV), cannabigerol monomethyl ether (CBGM) and cannabielsoin (CBE), cannabicitran (CBT).

The active substance may comprise one or more cannabinoid compounds selected from the group consisting of cannabidiol (CBD) and THC (tetrahydrocannabinol).

The active substance may comprise cannabidiol (CBD).

The active substance may comprise nicotine and cannabidiol (CBD).

The active substance may comprise nicotine, cannabidiol (CBD), and THC (tetrahydrocannabinol).

Botanicals

[0362] As noted herein, the active substance may comprise or be derived from one or more botanicals or constituents, derivatives or extracts thereof. As used herein, the term "botanical" includes any material derived from plants including, but not limited to, extracts, leaves, bark, fibres, stems, roots, seeds, flowers, fruits, pollen, husk, shells or the like. Alternatively, the material may comprise an active compound naturally existing in a botanical, obtained synthetically. The material may be in the form of liquid, gas, solid, powder, dust, crushed particles, granules, pellets, shreds, strips, sheets, or the like. Example botanicals are tobacco, eucalyptus, star anise, hemp, cocoa, cannabis, fennel, lemongrass, peppermint, spearmint, rooibos, chamomile, flax, ginger, ginkgo biloba, hazel, hibiscus, laurel, licorice (liquorice), matcha, mate, orange skin, papaya, rose, sage, tea such as green tea or black tea, thyme, clove, cinnamon, coffee, aniseed (anise), basil, bay leaves, cardamom, coriander, cumin, nutmeg, oregano, paprika, rosemary, saffron, lavender, lemon peel, mint, juniper, elderflower, vanilla, wintergreen, beefsteak plant, curcuma, turmeric, sandalwood, cilantro, bergamot, orange blossom, myrtle, cassis, valerian, pimento, mace, damien, marjoram, olive, lemon balm, lemon basil, chive, carvi, verbena, tarragon, geranium, mulberry, ginseng, theanine, theacrine, maca, ashwagandha, damiana, guarana, chlorophyll, baobab

or any combination thereof. The mint may be chosen from the following mint varieties: Mentha Arventis, Mentha c.v., Mentha niliaca, Mentha piperita, Mentha piperita citrata c.v., Mentha piperita c.v, Mentha spicata crispa, Mentha cardifolia, Mentha longifolia, Mentha suaveolens variegata, Mentha pulegium, Mentha spicata c.v. and Mentha suaveolens

[0363] In some embodiments, the active substance comprises or is derived from one or more botanicals or constituents, derivatives or extracts thereof and the botanical is tobacco.

[0364] In some embodiments, the active substance comprises or derived from one or more botanicals or constituents, derivatives or extracts thereof and the botanical is selected from eucalyptus, star anise, cocoa and hemp.

[0365] In some embodiments, the active substance comprises or derived from one or more botanicals or constituents, derivatives or extracts thereof and the botanical is selected from rooibos and fennel.

Flavors

[0366] In some embodiments, the substance to be delivered comprises a flavor.

[0367] As used herein, the terms "flavor" and "flavorant" refer to materials which, where local regulations permit, may be used to create a desired taste, aroma or other somatosensorial sensation in a product for adult consumers. They may include naturally occurring flavor materials, botanicals, extracts of botanicals, synthetically obtained materials, or combinations thereof (e.g., tobacco, cannabis, licorice (liquorice), hydrangea, eugenol, Japanese white bark magnolia leaf, chamomile, fenugreek, clove, maple, matcha, menthol, Japanese mint, aniseed (anise), cinnamon, turmeric, Indian spices, Asian spices, herb, wintergreen, cherry, berry, red berry, cranberry, peach, apple, orange, mango, clementine, lemon, lime, tropical fruit, papaya, rhubarb, grape, durian, dragon fruit, cucumber, blueberry, mulberry, citrus fruits, Drambuie, bourbon, scotch, whiskey, gin, tequila, rum, spearmint, peppermint, lavender, aloe vera, cardamom, celery, cascarilla, nutmeg, sandalwood, bergamot, geranium, khat, naswar, betel, shisha, pine, honey essence, rose oil, vanilla, lemon oil, orange oil, orange blossom, cherry blossom, cassia, caraway, cognac, jasmine, ylang-ylang, sage, fennel, wasabi, piment, ginger, coriander, coffee, hemp, a mint oil from any species of the genus *Mentha*, eucalyptus, star anise, cocoa, lemongrass, rooibos, flax, ginkgo biloba, hazel, hibiscus, laurel, mate, orange skin, rose, tea such as green tea or black tea, thyme, juniper, elderflower, basil, bay leaves, cumin, oregano, paprika, rosemary, saffron, lemon peel, mint, beefsteak plant, curcuma, cilantro, myrtle, cassis, valerian, pimento, mace, damien, marjoram, olive, lemon balm, lemon basil, chive, carvi, verbena, tarragon, limonene, thymol, camphene), flavour enhancers, bitterness receptor site blockers, sensorial receptor site activators or stimulators, sugars and/or sugar substitutes (e.g., sucralose, acesulfame potassium, aspartame, saccharine, cyclamates, lactose, sucrose, glucose, fructose, sorbitol, or mannitol), and other additives such as charcoal, chlorophyll, minerals, botanicals, or breath freshening agents. They may be imitation, synthetic or natural ingredients or blends thereof. They may be in any suitable form, for example, liquid such as an oil, solid such as a powder, or gas.

[0368] In some embodiments, the flavor comprises menthol, spearmint and/or peppermint. In some embodiments, the flavor comprises flavor components of cucumber, blueberry, citrus fruits and/or redberry. In some embodiments, the flavor comprises eugenol. In some embodiments, the flavor comprises flavor components extracted from tobacco. In some embodiments, the flavor comprises flavor components extracted from cannabis.

[0369] In some embodiments, the flavor may comprise a sensate, which is intended to achieve a somatosensorial sensation which are usually chemically induced and perceived by the stimulation of the fifth cranial nerve (trigeminal nerve), in addition to or in place of aroma or taste nerves, and these may include agents providing heating, cooling, tingling, numbing effect. A suitable heat effect agent may be, but is not limited to, vanillyl ethyl ether and a suitable cooling agent may be, but not limited to eucolyptol, WS-3.

Aerosol-generating Material

[0370] Aerosol-generating material is a material that is capable of generating aerosol, for example when heated, irradiated or energized in any other way. Aerosol-generating material may, for example, be in the form of a solid, liquid or gel which may or may not contain an active substance and/or flavorants. In some embodiments, the aerosol-generating material may comprise an "amorphous solid", which may alternatively be referred to as a "monolithic solid" (i.e. non-fibrous). In some embodiments, the amorphous solid may be a dried gel. The amorphous solid is a solid material that may retain some fluid, such as liquid, within it. In some embodiments, the aerosol-generating material may for example comprise from about 50 wt %, 60 wt % or 70 wt % of amorphous solid, to about 90 wt %, 95 wt % or 100 wt % of amorphous solid.

[0371] The aerosol-generating material may comprise one or more active substances and/or flavors s, one or more aerosol-former materials, and optionally one or more other functional materials.

Aerosol-former Material

[0372] The aerosol-former material may comprise one or more constituents capable of forming an aerosol. In some embodiments, the aerosol-former material may comprise one or more of glycerine, glycerol, propylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, 1,3-butylene glycol, erythritol, meso-Erythritol, ethyl vanillate, ethyl laurate, a diethyl suberate, triethyl citrate, triacetin, a diacetin mixture, benzyl benzoate, benzyl phenyl acetate, tributyrin, lauryl acetate, lauric acid, myristic acid, and propylene carbonate.

[0373] In some embodiments, the aerosol former comprises one or more polyhydric alcohols, such as propylene glycol, triethylene glycol, 1,3-butanediol and glycerin; esters of polyhydric alcohols, such as glycerol mono-, di- or triacetate; and/or aliphatic esters of mono-, di- or polycarboxylic acids, such as dimethyl dodecanedioate and dimethyl tetradecanedioate.

Functional Material

[0374] The one or more other functional materials may comprise one or more of pH regulators, coloring agents, preservatives, binders, fillers, stabilizers, and/or antioxidants.

Substrate

[0375] The material may be present on or in a support, to form a substrate. The support may, for example, be or comprise paper, card, paperboard, cardboard, reconstituted material, a plastics material, a ceramic material, a composite material, glass, a metal, or a metal alloy. In some embodiments, the support comprises a susceptor. In some embodiments, the susceptor is embedded within the material. In some alternative embodiments, the susceptor is on one or either side of the material.

Consumable

[0376] A consumable is an article comprising or consisting of aerosol-generating material, part or all of which is intended to be consumed during use by a user. A consumable may comprise one or more other components, such as an aerosol-generating material storage area, an aerosol-generating material transfer component, an aerosol generation area, a housing, a wrapper, a mouthpiece, a filter and/or an aerosol-modifying agent. A consumable may also comprise an aerosol generator, such as a heater, that emits heat to cause the aerosol-generating material to generate aerosol in use. The heater may, for example, comprise combustible material, a material heatable by electrical conduction, or a susceptor.

Susceptor

[0377] A susceptor is a material that is heatable by penetration with a varying magnetic field, such as an alternating magnetic field. The susceptor may be an electrically-conductive material, so that penetration thereof with a varying magnetic field causes induction heating of the heating material. The heating material may be magnetic material, so that penetration thereof with a varying magnetic field causes magnetic hysteresis heating of the heating material. The susceptor may be both electrically-conductive and magnetic, so that the susceptor is heatable by both heating mechanisms. The device that is configured to generate the varying magnetic field is referred to as a magnetic field generator, herein.

Aerosol-modifying Agent

[0378] An aerosol-modifying agent is a substance, typically located downstream of the aerosol generation area, that is configured to modify the aerosol generated, for example by changing the taste, flavor, acidity or another characteristic of the aerosol. The aerosol-modifying agent may be provided in an aerosol-modifying agent release component, that is operable to selectively release the aerosol-modifying agent

[0379] The aerosol-modifying agent may, for example, be an additive or a sorbent. The aerosol-modifying agent may, for example, comprise one or more of a flavorant, a colorant, water, and a carbon adsorbent. The aerosol-modifying agent may, for example, be a solid, a liquid, or a gel. The aerosol-modifying agent may be in powder, thread or granule form. The aerosol-modifying agent may be free from filtration material.

Aerosol Generator

[0380] An aerosol generator is an apparatus configured to cause aerosol to be generated from the aerosol-generating material. In some embodiments, the aerosol generator is a heater configured to subject the aerosol-generating material to heat energy, so as to release one or more volatiles from the aerosol-generating material to form an aerosol. In some embodiments, the aerosol generator is configured to cause an aerosol to be generated from the aerosol-generating material without heating. For example, the aerosol generator may be configured to subject the aerosol-generating material to one or more of vibration, increased pressure, or electrostatic energy.

1. A consumable for use with a non-combustible aerosol provision device, the consumable comprising:

a first aerosol-generating material; and

a second aerosol-generating material, wherein each of the first and second aerosol-generating materials comprise an amorphous solid, the amorphous solid comprising:

0.5-60 wt % of a gelling agent;

0-80 wt % of an aerosol-former material; and

0-60 wt % of at least one of an active substance, a flavorant and an acid;

wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material has a composition different from a composition of the amorphous solid of the second aerosol-generating material.

2. The consumable according to claim **1** wherein the amorphous solid of the first aerosol-generating material comprises the active substance and wherein the amorphous solid of the second aerosol-generating material comprises the flavorant.

3. The consumable according to claim **1** wherein the amorphous solid of the first aerosol-generating material is free from the flavorant and the acid and/or wherein the amorphous solid of the second aerosol-generating material is free from the active substance and the acid.

4. (canceled)

5. The consumable according to claim **1** wherein the amorphous solid of the first aerosol-generating material comprises the active substance and wherein the amorphous solid of the second aerosol-generating material comprises the acid.

6. The consumable according to claim **5** wherein the amorphous solid of the first aerosol-generating material is free from the acid and the flavorant and/or wherein the amorphous solid of second aerosol-generating material is free from the flavorant and the active substance.

7. (canceled)

8. The consumable according to claim **1** wherein the amorphous solid of the first aerosol-generating material comprises the flavorant and wherein the amorphous solid of the second aerosol-generating material comprises the acid.

9. The consumable according to claim **8** wherein the amorphous solid of the first aerosol-generating material is free from the active substance and the acid and/or wherein the amorphous solid of the second aerosol-generating material is free from flavorant and the active substance.

10. (canceled)

11. The consumable according to claim **1** wherein the first aerosol-generating material comprises

0.5-60 wt % of a gelling agent;

5-80 wt % of an aerosol-former material;

and is free from an active substance, a flavorant and an acid;

and the second aerosol-generating material comprises 0.1-60 wt % of at least one of an active substance, flavorant and an acid;

wherein these weights are calculated on a dry weight basis.

12. The consumable according to claim **1**, wherein the active substance of the amorphous solid of the first aerosol-generating material is present in a different quantity from a quantity of the active substance in the amorphous solid of the second aerosol-generating material.

13. (canceled)

14. The consumable according to claim **12**, wherein the amorphous solid of the first aerosol-generating material comprises from 0-10 wt % of the active substance present therein, and the amorphous solid of the second aerosol-generating material comprises from 10-60 wt % of the active substance present therein.

15. The consumable according to claim **1**, wherein the amorphous solid of the first aerosol-generating material comprises a different flavorant from the flavorant of the amorphous solid of the second aerosol-generating material and/or wherein the amorphous solid of the first aerosol-generating material comprises a different active substance from the active substance of the amorphous solid of the second aerosol-generating material.

16. (canceled)

17. The consumable according to claim **1** wherein the consumable comprises a support and the first and second aerosol-generating materials are attached to the support.

18. The consumable according to claim **17** wherein the support is a planar support.

19. The consumable according to claim **1**, comprising a third aerosol-generating material comprising an amorphous solid, the amorphous solid comprising:

0.5-60 wt % of a gelling agent;

0-80 wt % of an aerosol-former material; and

0-60 wt % of at least one of an active substance, flavorant and an acid;

wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the third aerosol-generating material has a different composition from a composition of the amorphous solid of the first aerosol-generating material and/or the second aerosol-generating material.

20. The consumable according claim **19**, comprising a fourth aerosol-generating material comprising an amorphous solid, the amorphous solid comprising:

0.5-60 wt % of a gelling agent;

0-80 wt % of an aerosol-former material; and

0-60 wt % of at least one of an active substance, flavorant and an acid;

wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the fourth aerosol-generating material has a different composition from a composition of the amorphous solid of at least one of the first, second or third aerosol-generating materials.

21. The consumable according to claim **20**, wherein the amorphous solid of the first aerosol-generating material comprises the active substance and is free from the flavorant and the acid;

the amorphous solid of the second aerosol-generating material comprises the flavorant and is free from the active substance and the acid;

the amorphous solid of the third aerosol-generating material comprises the acid and is free from the flavorant and the active substance; and

the amorphous solid of the fourth aerosol-generating material is free from the active substance, the flavorant and the acid.

22. (canceled)

23. The consumable according to claim **1**, wherein when the amorphous solid comprises acid, the acid is an organic acid, such as lactic acid and/or benzoic acid.

24. (canceled)

25. (canceled)

26. A non-combustible aerosol provision system comprising a consumable according to claim **1** and a non-combustible aerosol provision device, the non-combustible aerosol provision device comprising an aerosol-generation device arranged to generate aerosol from the consumable when the consumable is used with the non-combustible aerosol provision device.

27. A method of manufacturing a consumable for use with a non-combustible aerosol provision device, the method comprising:

providing a support;

depositing on the support at least two discrete portions of slurry comprising a gelling agent, an aerosol-former material and at least one of an active substance, a flavorant and an acid;

drying the at least two discrete portions of slurry to provide a first aerosol-generating material and a second aerosol-generating material, wherein the first and second aerosol-generating materials are attached to the support;

wherein each of the first and second aerosol-generating materials comprise an amorphous solid, the amorphous solid comprising:

0.5-60 wt % of a gelling agent;

0-80 wt % of an aerosol-former material; and

0-60 wt % of at least one of an active substance, a flavorant and an acid, wherein these weights are calculated on a dry weight basis and wherein the amorphous solid of the first aerosol-generating material has a composition different from a composition of the amorphous solid of the second aerosol-generating material; and

forming the consumable.

28. A consumable formed according to the method of claim **27**.

29. Use of a consumable as described in claim **1** in a non-combustible aerosol provision device, wherein the device is arranged to generate aerosol from the consumable when the consumable is used with the non-combustible aerosol provision device.

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