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(54) Titre : PROCEDE DE FABRICATION D'UN ARTICLE DESTINE A ETRE UTILISE DANS UN SYSTEME DE FOURNITURE D'AEROSOL ET ARTICLE DESTINE A ETRE UTILISE DANS UN SYSTEME DE FOURNITURE D'AEROSOL

(54) Title: A METHOD OF MANUFACTURING AN ARTICLE FOR USE IN AN AEROSOL PROVISION SYSTEM AND AN ARTICLE FOR USE IN AN AEROSOL PROVISION SYSTEM

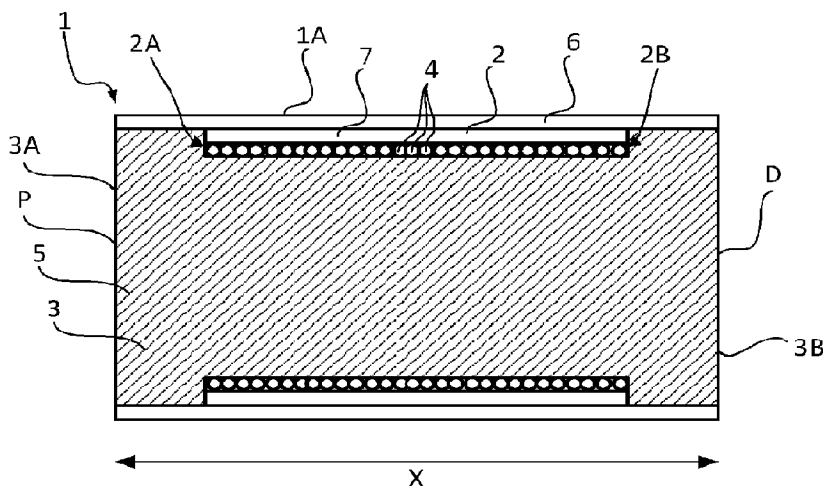


FIG. 1

(57) **Abrégé/Abstract:**

The present disclosure relates to a method of manufacturing an article for use in an aerosol provision system, the method comprising: providing a first sheet material; providing a substrate comprising a first aerosol generating material, wherein the substrate is attached to the first sheet material; and, arranging the first sheet material with the substrate attached thereto such that the first sheet material surrounds the substrate. The present disclosure also relates to an article for an aerosol provision device. The present disclosure also relates to an assembly for use in manufacturing an aerosol provision device, a kit of parts comprising an article and an aerosol provision device, and to a package of articles.

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Abstract:

The present disclosure relates to a method of manufacturing an article for use in an aerosol provision system, the method comprising: providing a first sheet material; providing a substrate comprising a first aerosol generating material, wherein the substrate is attached to the first sheet material; and, arranging the first sheet material with the substrate attached thereto such that the first sheet material surrounds the substrate. The present disclosure also relates to an article for an aerosol provision device. The present disclosure also relates to an assembly for use in manufacturing an aerosol provision device, a kit of parts comprising an article and an aerosol provision device, and to a package of articles.

A method of manufacturing an article for use in an aerosol provision system and an article for use in an aerosol provision system

Technical field

5 The present disclosure relates to a method of manufacturing an article for an aerosol provision device and to an article for an aerosol provision device. The present disclosure also relates to an assembly for use in manufacturing an aerosol provision device, a kit of parts comprising an article and an aerosol provision device, and to a package of articles.

10

Background

Aerosol-provision systems generate an inhalable aerosol or vapour during use by releasing compounds from an aerosol-generating-material. These may be referred to as non-combustible smoking articles, aerosol generating assemblies, or aerosol provision
15 devices, for example.

Summary

In accordance with some embodiments described herein, there is provided a method of manufacturing an article for use in an aerosol provision system, the method
20 comprising: providing a first sheet material; providing a substrate comprising a first aerosol generating material, wherein the substrate is attached to the first sheet material; and, arranging the first sheet material with the substrate attached thereto such that the first sheet material surrounds the substrate.

25 In some embodiments, the substrate is adhered to the first sheet material.

In some embodiments, the substrate comprises a second sheet material and , preferably, providing the substrate comprises attaching the second sheet material to the first sheet material.

30

In some embodiments, the substrate is cast on to the first sheet material. For example, a first sheet material may be provided, and a slurry comprising the first aerosol generating material may be provided on the first sheet material and allowed to dry.

In some embodiments, the second sheet material is a cast sheet. The method may comprise casting the second sheet material, for example, casting the second sheet material from a slurry.

- 5 In some embodiments, the second sheet material comprises the first aerosol generating material.

In some embodiments, the second sheet material is formed from a slurry that comprises the first aerosol generating material and, preferably, wherein the slurry is
10 cast to form the second sheet material.

In some embodiments, the second sheet material is a cast sheet.

In some embodiments, the first aerosol generating material is attached to a surface of
15 the second sheet material and, preferably, is adhered to the surface of the second sheet material.

In some embodiments, the first aerosol generating material is attached to the surface of the second sheet material before or after attaching the second sheet material to the first
20 sheet material.

In some embodiments, the second sheet material comprises one or more of: paper, card and/or aerosol generating material.

- 25 In some embodiments, providing the first sheet material comprises providing a web of first sheet material.

In some embodiments, the first sheet material comprises paper or card.

- 30 In some embodiments, the first sheet material comprises a metal.

In some embodiments, the first sheet material comprises an aluminium foil.

In some embodiments, the first sheet material comprises a co-laminated material
35 comprising a paper layer and an aluminium layer.

In some embodiments, attaching the substrate to the first sheet material comprises attaching the substrate to the aluminium layer.

5 In some embodiments, the method further comprises cutting ventilation apertures into the substrate and/or first sheet of material.

In some embodiments, providing the substrate comprises applying the substrate to the web of first sheet material.

10 In some embodiments, applying the substrate to the web of first sheet material comprising applying a web of the second sheet material to the web of first sheet material.

15 In some embodiments, applying the substrate to the web of first sheet material comprising applying a plurality of portions of second sheet material to the web of first sheet material.

In some embodiments, the plurality of portions of second sheet material are spaced from each other on the web of first sheet material.

20

In some embodiments, the portions of second sheet material are discrete. The portions of second sheet material may be spaced from each other in a direction along the conveyance path of the web of first sheet material.

25 In some embodiments, an edge of the substrate is spaced from an edge of the first sheet material such that a region of the first sheet material is not covered by the substrate and, preferably, the method comprises applying adhesive to said region.

In some embodiments, the first sheet material has a permeability of at most 100
30 Coresta Units.

In some embodiments, the first sheet material has a thickness in the range of 20 to 100 microns.

35 In some embodiments, the first sheet material forms an exterior surface of the article.

In some embodiments, the first aerosol generating material comprises aerosol generating material dust and/or aerosol generating material fibres.

5 In some embodiments, the first aerosol generating material comprises extruded and/or compressed aerosol generating material.

In some embodiments, the first aerosol generating material comprises beads.

10 In some embodiments, the beads have a diameter in the range of 0.5 to 3 mm and, preferably, in the range of 1 to 2 mm.

In some embodiments, the first aerosol generating material comprises, consists of, or essentially consists of tobacco material.

15 In some embodiments, the tobacco material of the first and/or second aerosol generating material is derived only from tobacco lamina and no other types of tobacco material.

20 In some embodiments, the first and/or second aerosol generating material comprises tobacco lamina and reconstituted tobacco.

In some embodiment, the first and second aerosol generating material together have an average nicotine level in the range of 0.5% to 2.5% by weight of the first and second aerosol generating material and, preferably, in the range of 1% to 2.1%.

25 In some embodiments, the total weight of aerosol generating material in the article is in the range of 150 to 350 mg and, preferably, in the range of 200 to 300 mg, 220 to 280 mg, or 230 to 260 mg.

30 In some embodiments, the article comprises in the range of 7 mg per mm to 13 mg of aerosol generating material per mm length of the article and, preferably, in the range of 8 to 12, 9 to 11.5, 9 to 11, or 9.5 to 10.5 mg of aerosol generating material per mm length of the article.

35 In some embodiments, the first and/or second aerosol generating material is a solid material.

In some embodiments, the article does not comprise plastic.

In some embodiments, the article does not comprise cellulose acetate.

5

In some embodiments, the first and second aerosol generating materials are manufactured from the same aerosol generating starter materials that are processed to have different forms.

10 In some embodiments, the article further comprises a second aerosol generating material.

In some embodiments, the density of one of the first and second aerosol-generating materials is at least about 25% higher than the density of the other one of the first and
15 second aerosol generating materials. However, in other embodiments, the density of the first and second aerosol generating materials is the same.

In some embodiments, one of the first and second aerosol generating materials has a density of from about 0.1 g/cm³ to about 1 g/cm³.

20

In some embodiments, the other one of the first and second aerosol generating materials has a density of from about 0.4 g/cm³ to about 2 g/cm³.

In some embodiments, the heating of the article provides a relatively constant release
25 of volatile compounds into an inhalable medium.

In some embodiments, the first aerosol-generating material comprises extruded tobacco.

30 In some embodiments, the first aerosol-generating material comprises beads.

In some embodiments, the second aerosol-generating material comprises one or more tobacco material selected from the group consisting of lamina and reconstituted tobacco material.

35

In some embodiments, at least one of the first and second aerosol-generating material comprises a combination of lamina and reconstituted tobacco material. In some embodiments, the lamina and reconstituted tobacco material are present in the aerosol-generating material in a ratio of from 1:4 to 4:1, by weight.

5

In some embodiments, the first and second aerosol-generating materials have the same levels of a volatile compound. In some embodiments, the volatile compound is nicotine.

10 In some embodiments, the release of a volatile compound from the first and second aerosol-generating material is at the same rate when the materials reach a given temperature.

15 In some embodiments, the first and second aerosol-generating materials are present in the article in a ratio of from 1:10 to 10:1, by weight.

In some embodiments, the second aerosol generating material has a higher or lower density than the first aerosol generating material.

20 In some embodiments, the second aerosol generating material comprises, consists of, or essentially consists of tobacco material.

In some embodiments, the second aerosol generating material comprises shredded tobacco and/or reconstituted tobacco.

25

In some embodiments, the substrate comprises the second aerosol generating material.

30 In some embodiments, the second sheet material comprises the first and/or second aerosol generating materials. For example, the second sheet material may be formed from a slurry that comprises the first and/or second aerosol generating materials.

In some embodiments, the first and/or second aerosol generating materials are applied to a surface of the second sheet material.

In some embodiments, the second sheet material comprises one of the first and second aerosol generating materials and the other one of the first and second aerosol generating materials is applied to a surface of the second sheet material.

5 In some embodiments, arranging the first sheet material with the substrate attached thereto comprises providing the first sheet material and substrate around at least a portion of a body of material and, preferably, comprises wrapping the first sheet material with substrate about the body of material.

10 In some embodiments, the first sheet material circumscribes the body of material. In some embodiments, the substrate circumscribes the body of material.

In some embodiments, the body of material comprises a third sheet material that is gathered to form the body of material.

15

In some embodiments, the third sheet material is crimped and/or cut into strips.

In some embodiments, the substrate is in direct contact with the body of material.

20 In some embodiments, the body of material comprises a tobacco rod. For example, the body of material may comprise shredded tobacco material that is formed into a rod. In some embodiments, the body of material comprises cut rag tobacco that is formed into a rod.

25 In some embodiments, the body of material comprises the second aerosol generating material.

According to the present disclosure, there is also provided an assembly for use in a method of manufacturing an article for use in an aerosol provision system, the
30 assembly comprising: a first sheet material; and, a patch comprising a first aerosol generating material, wherein the patch is attached to the first sheet material.

In some embodiments, the patch is adhered to the first sheet material.

35 In some embodiments, the first sheet material is laid flat.

According to the present disclosure, there is also provided an article for use in an aerosol provision system, the article comprising: a first sheet material; and, a patch comprising a first aerosol generating material, wherein the patch is attached to the first sheet material, wherein the sheet material and patch are arranged such that the sheet material surrounds the patch.

In some embodiments, the patch is adhered to the first sheet material.

In some embodiments, the first sheet material forms an exterior surface of the article.

In some embodiments, the first sheet material comprises paper or card.

In some embodiments, the first sheet material comprises a metal.

In some embodiments, the first sheet material comprises an aluminium foil.

In some embodiments, the first sheet material comprises a co-laminated material comprising a paper layer and an aluminium layer.

In some embodiments, the patch is attached the aluminium layer.

In some embodiments, the article further comprises a second aerosol generating material.

In some embodiments, the first and/or second aerosol generating material is substantially tobacco free.

In some embodiments, the second aerosol generating material has a higher or lower density than the first aerosol generating material.

In some embodiments, the second aerosol generating material comprises, consists of, or essentially consists of tobacco material.

In some embodiments, the second aerosol generating material comprises shredded tobacco and/or reconstituted tobacco.

In some embodiments, the article further comprises a body of material, wherein the first sheet material and patch are disposed around at least a portion of the body of material.

- 5 In some embodiments, the first sheet material circumscribes the body of material. In some embodiments, the patch circumscribes the body of material.

In some embodiments, the body of material comprises a third sheet material that is gathered to form the body of material.

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In some embodiments, the third sheet material is crimped and/or cut into strips.

In some embodiments, the substrate is in direct contact with the body of material.

- 15 In some embodiments, the body of material comprises a tobacco rod. For example, the body of material may comprise shredded tobacco material that is formed into a rod. In some embodiments, the body of material comprises cut rag tobacco that is formed into a rod.

- 20 In some embodiments, the body of material comprises the second aerosol generating material.

In some embodiments, the patch comprises a second sheet material and, preferably, the second sheet material is a cast sheet.

25

In some embodiments, the second sheet material is attached to the first sheet material, for example, by adhesive.

- 30 In some embodiments, the second sheet material comprises the first aerosol generating material.

In some embodiments, the second sheet material is formed from a slurry that comprises the first aerosol generating material and, preferably, the slurry is cast to form the second sheet material.

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In some embodiments, the first aerosol generating material is attached to a surface of the second sheet material and, preferably, is adhered to the surface of the second sheet material.

- 5 In some embodiments, the second sheet material comprises one or more of: paper, card and/or aerosol generating material.

10 In some embodiments, the first and/or second aerosol-generating material comprises: from about 10 to about 50 wt% aerosol-former material; from about 15 to about 60 wt% gelling agent; and optionally filler; wherein the wt% values are calculated on a dry weight basis. In some embodiments,, the first and/or second aerosol generating material comprises a flavourant.

15 In some embodiments, the patch comprises a first end that is spaced from a first end of the first sheet material.

In some embodiments, the patch comprises a second end, opposite to the first end, wherein the second end is spaced from a second end of the first sheet material.

20 In some embodiments, the patch extends over a portion of the length of the article. In some embodiments, the patch extends over the entire length of the article.

25 In some embodiments, an edge of the substrate is spaced from an edge of the first sheet material such that a region of the first sheet material is not covered by the substrate and, preferably, wherein said edges are longitudinal edges of the substrate and first sheet material.

30 In some embodiments, the first sheet material has a permeability of at most 100 Coresta Units.

In some embodiments, the first sheet material has a thickness in the range of 20 to 100 microns.

35 In some embodiments, the first aerosol generating material comprises aerosol generating material dust and/or aerosol generating material fibres.

In some embodiments, the first aerosol generating material comprises extruded and/or compressed aerosol generating material.

In some embodiments, the first aerosol generating material comprises beads.

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In some embodiments, the beads have a diameter in the range of 0.5 to 3 mm and, preferably, in the range of 1 to 2 mm.

10 In some embodiments, the first aerosol generating material comprises, consists of, or essentially consists of tobacco material.

In some embodiments, the tobacco material of the first and/or second aerosol generating material is derived only from tobacco lamina and no other types of tobacco material.

15

In some embodiments, the first and/or second aerosol generating material comprises tobacco lamina and reconstituted tobacco.

20 In some embodiment, the first and second aerosol generating material together have an average nicotine level in the range of 0.5% to 2.5% by weight of the first and second aerosol generating material and, preferably, in the range of 1% to 2.1%.

In some embodiments, the first and/or second aerosol generating material is a solid material.

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In some embodiments, the article does not comprise plastic. In some embodiments, the article does not comprise cellulose acetate.

30 In some embodiments, the first and second aerosol generating materials are manufactured from the same aerosol generating starter materials that are processed to have different forms.

In some embodiments, the patch comprises the second aerosol generating material.

35 In some embodiments, the patch comprises a second sheet material that comprises the first and/or second aerosol generating materials. For example, the second sheet

material may be formed from a slurry that comprises the first and/or second aerosol generating materials.

5 In some embodiments, the first and/or second aerosol generating materials are applied to a surface of the second sheet material.

10 In some embodiments, the second sheet material comprises one of the first and second aerosol generating materials and the other one of the first and second aerosol generating materials is applied to a surface of the second sheet material.

According to the present disclosure, there is also provided an article manufactured according to the method disclosed herein.

15 According to the present disclosure, there is also provided a package comprising a plurality of articles disclosed herein. In some embodiments, the package is hermetically sealed.

20 According to the present disclosure, there is also provided a kit of parts comprising the article disclosed herein and an aerosol provision device.

In some embodiments, the aerosol provision device comprises a heating chamber for receiving the article to heat the first and second aerosol generating materials.

Brief Description of the Drawings

25 Embodiments will now be described, by way of example only, with reference to accompanying drawings, in which:

Fig. 1 is cross-sectional side view of an embodiment of an article for use in an aerosol provision system;

30 Fig. 2 is a top view of a first sheet material of the article of Fig. 1, wherein the first sheet material is laid flat;

Fig. 3 is a top view of a second sheet material of the article of Fig. 1, wherein the second sheet material is laid flat;

Fig. 4 is perspective view of an embodiment of the article of Fig. 1;

35 Fig. 5 is a top view of a substrate of the article of Fig. 1, wherein the substrate is laid flat;

Fig. 6 is a top view of an arrangement for use in the manufacture of the article of Fig. 1, wherein the arrangement comprises the first sheet material and the substrate;

Fig. 7 is a perspective view of a bead of aerosol-generating material of the article of Fig. 1;

5 Fig. 8 is a cross-sectional side view of another embodiment of an article for use in an aerosol provision system;

Fig. 9 is a cross-sectional side view of another embodiment of an article for use in an aerosol provision system;

10 Fig. 10 is a cross sectional view of an embodiment of a non-combustible aerosol provision device;

Fig. 11 is a simplified schematic of the components within the housing of the aerosol provision device shown in Fig. 10;

Fig. 12 is a cross sectional view of the non-combustible aerosol provision device shown in Fig. 10 with the article shown in Fig. 1 inserted into the device;

15 Fig. 13 is a cross-sectional side view of another embodiment of an article for use in an aerosol provision system;

Fig. 14 is a block diagram illustrating a method of manufacturing an article for use in an aerosol provision system;

20 Fig. 15A is a top view of a first step of a method of manufacturing a consumable for use in an aerosol provision system;

Fig. 15B is a top view of a second step of a method of manufacturing an article for use in an aerosol provision system;

Fig. 15C is a top view of a third step of a method of manufacturing an article for use in an aerosol provision system;

25 Fig. 15D is a top view of a fourth step of a method of manufacturing a consumable for use in an aerosol provision system;

Fig. 15E is a top view of a fifth step of a method of manufacturing an article for use in an aerosol provision system;

30 Fig. 15F is a cross-sectional side view of a sixth step of a method of manufacturing an article for use in an aerosol provision system;

Fig. 15G is a cross-sectional side view of a seventh step of a method of manufacturing an article for use in an aerosol provision system;

Fig. 16 is a schematic diagram of an apparatus for manufacturing an article for use in an aerosol provision system;

35 Fig. 17 is a cross-sectional side view of another embodiment of an article for use in an aerosol provision system; and,

Fig. 18 is a cross-sectional side view of another embodiment of an article for use in an aerosol provision system.

Detailed description

5 As used herein, the term “delivery system” is intended to encompass systems that deliver at least one substance to a user, and includes:

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
10 substitutes or other smokable material);

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

15 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.

20 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.

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

In some embodiments, the non-combustible aerosol provision system is an electronic
30 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.

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

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 a plant based material, for example, tobacco or a non-tobacco product.

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.

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.

The terms 'upstream' and 'downstream' used herein are relative terms defined in relation to the direction of mainstream aerosol drawn through an article or device in use. Reference to the 'distal end' refers to an upstream end of the device, whereas 'proximal end' refers to the downstream end of the device.

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 energised 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.

In some embodiments, the non-combustible aerosol provision system comprises 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.

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.

The consumable comprises a substance to be delivered. The substance to be delivered is an aerosol-generating material. As appropriate, the material may comprise one or more active constituents, one or more flavours, one or more aerosol-former materials, and/or one or more other functional materials.

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

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

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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.

15

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.

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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.

In some embodiments, the substance to be delivered comprises a flavour.

25

As used herein, the terms "flavour" and "flavourant" 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 flavour 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,

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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,

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lavender, aloe vera, cardamom, celery, cascarrilla, 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.

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

In some embodiments, the flavour 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 is not limited to eucalyptol, WS-3.

The aerosol-generating material may comprise or be an "amorphous solid". In some embodiments, the aerosol-generating material comprises an aerosol-generating film that is an amorphous solid. The amorphous solid may be a "monolithic solid". The amorphous solid may be substantially 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 amorphous solid may, for example, comprise from about 50wt%, 60wt% or 70wt% of amorphous solid, to about 90wt%, 95wt% or 100wt% of amorphous solid. An aerosol-generating material may also be referred to as an aerosolisable material.

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An aerosol-generating material is a material that is capable of generating aerosol, for example when heated, irradiated or energized in any other way. An aerosol-generating material may be in the form of a solid, liquid or gel which may or may not contain an active substance and/or flavourants. The aerosol-generating material is incorporated

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As used herein, the term “tobacco material” refers to any material comprising tobacco or derivatives or substitutes thereof. The tobacco material may be in any suitable form. The term “tobacco material” may include one or more of tobacco, tobacco derivatives,

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expanded tobacco, reconstituted tobacco or tobacco substitutes. The tobacco material may comprise one or more of ground tobacco, tobacco fibre, cut tobacco, extruded tobacco, tobacco stem, tobacco lamina, reconstituted tobacco and/or tobacco extract.

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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

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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, in particular a heating element, that emits heat to cause the aerosol-generating material to generate aerosol in use. The

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heater may, comprise, a material heatable by electrical conduction, or a susceptor.

The aerosol-generating material may comprise one or more active substances and/or flavours, one or more aerosol-former materials, and optionally one or more other functional material.

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The aerosolisable material may be present on a substrate. The substrate may, for example, be or comprise paper, card, paperboard, cardboard, reconstituted aerosolisable material, a plastics material, a ceramic material, a composite material, glass, a metal, or a metal alloy.

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.

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

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.

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.

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, flavour, 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.

5 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 flavourant, a colourant, 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.

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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.

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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.

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The filamentary tow material described herein can comprise cellulose acetate fibre tow. The filamentary tow can also be formed using other materials used to form fibres, such as polyvinyl alcohol (PVOH), polylactic acid (PLA), polycaprolactone (PCL), poly(1-4 butanediol succinate) (PBS), poly(butylene adipate-co-terephthalate)(PBAT), starch based materials, cotton, aliphatic polyester materials and polysaccharide polymers or a combination thereof. The filamentary tow may be plasticised with a suitable plasticiser for the tow, such as triacetin where the material is cellulose acetate tow, or the tow may be non-plasticised. The tow can have any suitable specification, such as fibres having a 'Y' shaped or other cross section such as 'X' shaped, filamentary denier values between 2.5 and 15 denier per filament, for example between 8.0 and 11.0 denier per filament and total denier values of 5,000 to 50,000, for example between 10,000 and 40,000.

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In the figures described herein, like reference numerals are used to illustrate equivalent features, articles or components.

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Fig. 1 is a cross-sectional side view of an article 1 for use in an aerosol delivery system that includes an aerosol delivery device 200 (see Figs. 10 to 12).

The article 1 has an upstream or distal end 'D' and a downstream or proximal end 'P'. In some embodiments, the proximal end P is located relatively closer to a mouthpiece 207 of the aerosol delivery device 200 in use than the distal end D. In another embodiment
5 (not shown), the proximal end P of the article 1 comprises a mouthpiece. In some embodiments (not shown), the proximal end P of the article 1 forms the mouthpiece.

It should be recognised that in some embodiments, the article 1 can be used with the aerosol delivery device 200 in either orientation, such that it does not matter which end
10 of the article 1 is upstream and which is downstream.

The article 1 comprises a substrate 2 and a body of material 3. The substrate 2 at least partially circumscribes the body of material 3.

15 In the present example, the substrate 2 is in the form of a patch 2.

The patch 2 comprises a first aerosol generating material 4. The body of material 3 comprises a second aerosol generating material 5.

20 In the present example, the first sheet material 6 and patch 2 are arranged such that the patch 2 is provided on an inside surface of the first sheet material 6. That is, the patch 2 is located radially inwardly of the first sheet material 6. In some embodiments, the first sheet material 6 surrounds, or at least partially surrounds, the patch 2. However, it should be recognised that in alternative embodiments (not shown), the patch 2 may be
25 provided on an exterior surface of the first sheet material 6 such that the first sheet material 6 is located radially inwardly of the patch 2.

In some embodiments, the first sheet material 6 forms an exterior surface 1A of the article 1. In the present example, the first sheet material 6 forms a generally cylindrical
30 peripheral surface 1A of the article 1.

The first sheet material 6 may comprise paper or card of suitable grammage and thickness. The grammage and thickness of the first sheet material 6 may be selected according to the desired stiffness of the first sheet material 6.

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In some embodiments, the first sheet material 6 may comprises a metal. For example, the first sheet material 6 may be a co-laminated material comprising a paper layer and metal layer. In some embodiments the metal layer may comprise or consist of aluminium. The thickness of the aluminium layer may be selected to provide the first
5 sheet material with the requisite structural properties and/or act as a susceptor to heat the aerosol generating material 4 in use.

The patch 2 comprises a second sheet material 7. In the present example, the second sheet material 7 is a cast sheet. For example, the second sheet material 7 may be formed
10 from a slurry that is cast and then set (e.g. by heating) to form the second sheet material 7.

In some embodiments, the slurry is cast and dried to form the second sheet material 7, which is subsequently attached to the first sheet material 6.

15 In other embodiments, the slurry may be cast in place on the first sheet material 6 such that when the slurry dries it forms a second sheet material 7 (e.g. a patch 2) that is adhered to the first sheet material 6. The first aerosol generating material 4 may be provided in the slurry before it is applied to the first sheet material 6, or applied to or
20 mixed with the slurry after the slurry has been applied to the first sheet material 6.

In the embodiment of Figs. 1 to 6, the first aerosol generating material 4 is attached to a first surface of the second sheet material 7. In the present example, the first aerosol generating material 4 is adhered to the first surface of the second sheet material 7. For
25 example, adhesive (not shown) may be applied to one or both of the first aerosol generating material 4 or second sheet material 7.

The first aerosol generating material 4 may be a loose aerosol generating material (for example, dust, fibres or beads/pellets/granules) that are adhered to the second sheet
30 material 7.

In some embodiments, the second sheet material 7 comprises one or more of: paper, card or an aerosol generating material. The second sheet material 7 may comprise reconstituted tobacco.

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In the present example, the body of material 3 is a rod 3 comprising the second aerosol generating material 5. The body of material 3 may be a tobacco rod 3. For example, the body of material 3 may be a rod comprising shredded lamina tobacco and/or shredded reconstituted tobacco (for example, shredded reconstituted tobacco sheet).

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In another embodiment (not shown), the body of material 3 comprises a third sheet material that is gathered to form the body of material 3. The third sheet material may comprise the second aerosol generating material 5, which optionally may comprise, consist of, or essentially consist of, a tobacco material. For example, the third sheet

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material may be reconstituted tobacco that is gathered to form the body of material 3.

In some embodiments, the third sheet material is crimped to promote gathering of the third sheet material to form the body of material 3.

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In some embodiments, the third sheet material is cut into strips and then the strips are formed into the body of material 3.

In some embodiments, the patch 2 is in direct contact with the body of material 3. This helps to encourage heat transfer between the patch 2 and the body of material 3.

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The patch 2 comprises opposite first and second edges 2A, 2B. In the present example, the first edge 2A of the patch 2 is spaced from a first end 3A of the body of material 3 and the second edge 2B of the patch 2 is spaced from a second end 3B of the body of material 3.

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In the present example, the first sheet of material 6 comprises opposite first and second edges 6A, 6B. The patch 2 may be located on the first sheet of material 6 such that the first edge 2A of the patch 2 is proximate to, but spaced from, the first edge 6A of the first sheet of material 6 and such that the second edge 2B of the patch 2 is proximate to, but spaced from, the second edge 6B of the first sheet of material 6. In an alternative embodiment, the first edge 2A of the patch 2 is aligned with the first edge 6A of the first sheet of material 6 and/or the second edge 2B of the patch 2 is aligned with the second edge 6B of the second sheet of material 6.

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In the present example, the patch 2 extends over a portion of the axial length of the body of material 3. However, it should be recognised that in other embodiments the patch 2 extends over the entire axial length of the body of material 3.

- 5 In the present example, the body of material 3 extends over a portion of the length of the article 1 (shown by arrow 'X' in Fig. 1). In an alternative embodiment, the body of material 3 extends over the entire length X of the article 1.

- 10 In some embodiments, the patch 2 comprises opposite third and fourth edges 2C, 2D and the first sheet material 6 comprises opposite third and fourth edges 6C, 6D. The third edge 2C of the patch 2 may be spaced from the third edge 6C of the first sheet material 6 such that the first sheet material 6 comprises a region 8 that is not covered by the patch 2. The region 8 may be arranged to overlap the fourth edge 6D of the first sheet material 6 and may be adhered to an outer surface of the first sheet material 6.
- 15 The region 8 not being covered by the patch 2 facilitates adhesion of the inside surface of the region 8 of the first sheet material 6 to the outer surface of the first sheet material 6.

- 20 The article 1 is configured to be heated by an aerosol provision device 200 such that the first and second aerosol generating materials 4, 5 are heated to generate an aerosol.

- In some embodiments, the first sheet material 6 has a permeability of at most 100 Coresta Units and, preferably, at most 90, 80, 70, 60 or 50 Coresta Units. In some embodiments, the first sheet material 6 is a porous material and may have a
- 25 permeability of greater than 100 Coresta Units. Alternatively, or additionally, the first sheet material 6 may comprise one or more slits or apertures to increase the permeability of the first sheet material 6.

- In some embodiments, the first sheet material 6 has a thickness in the range of 20 to
- 30 100 microns. It has been found that reducing the thickness of the first sheet material 6 helps to facilitate heat transfer to the first and second aerosol generating materials 4, 5. In some embodiments, the first sheet material 6 is a porous material.

- Increasing the heat transfer through the sheet material 6 advantageously improves the
- 35 efficiency of the heating of the first and second aerosol generating materials 4, 5.

In some embodiments, the first sheet material 6 has a basis weight in the range of 20 to 50 gsm.

5 In some embodiments, the first and/or second aerosol generating material 4, 5 is a loose material.

In the present example, the first aerosol generating material 4 comprises extruded and/or compressed aerosol generating material, as explained in more detail below. However, it should be recognised that in other embodiments, the first aerosol
10 generating material 4 may have a different form.

In some embodiments, the first and/or second aerosol generating material 4, 5 comprises beads. The beads may be cylindrical, or may have an alternative shape, for example, spherical, pyramid or cuboid shaped.
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In the present example, the first aerosol generating material 4 comprises beads 4.

In some embodiments, the beads 4 have a diameter (shown by arrow 'D' in Fig. 7) in the range of 0.5 to 3 mm and, preferably, in the range of 1 to 2 mm.
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In some embodiments, the beads 4 have an axial length (shown by arrow 'L' in Fig. 7) in the range of 0.5 to 3 mm and, preferably, in the range of 1 to 2 mm.

In some embodiments, the beads 4 have a particle size in the range of 0.5 to 3 mm and, preferably, in the range of 1 to 2 mm.
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In some embodiments, the first and/or second aerosol generating material 4, 5 comprises, consists of, or essentially consists of tobacco material.

30 In some embodiments, the tobacco material of the first and/or second aerosol generating material 4, 5 is derived only from tobacco lamina and no other types of tobacco material.

In some embodiments, the first and/or second aerosol generating material 4, 5
35 comprises tobacco lamina and reconstituted tobacco.

In some embodiments, the first and second aerosol generating material 4, 5 together have an average nicotine level in the range of 0.5% to 2.5% by weight of the first and second aerosol generating materials 4, 5 and, preferably, in the range of 1% to 2.1%.

- 5 In some embodiments, the first aerosol generating material 4 has a nicotine level in the range of 0.5% to 2.5% by weight of the first aerosol generating material 4 and, preferably, in the range of 1% to 2.1%.

- 10 In some embodiments, the second aerosol generating material 5 has a nicotine level in the range of 0.5% to 2.5% by weight of the second aerosol generating material 5 and, preferably, in the range of 1% to 2.1%.

- 15 In some embodiments, the aerosol generating material in the article 1 comprises approximately 50% of the first aerosol-generating material 4 and about 50% of the second aerosol-generating material 5, by weight. Thus, for example, an article comprising 260 mg of aerosol-generating material may comprise 130 mg of the first aerosol-generating material 4 and 130 mg of the second aerosol-generating material 5.

- 20 In some embodiments, the article 1 comprises from about 20 to about 330 mg of the first aerosol generating material 4 and, preferably, from about 50 to about 300 mg, or from about 40 to about 125 mg of the first aerosol generating material 4.

- 25 In some embodiments, the article 2 comprises from about 20 to about 330 mg of the second aerosol generating material 5 and, preferably, from about 50 to about 300 mg, or from about 40 to about 125 mg of the second aerosol generating material 5. In some embodiments, the total mass of aerosol generating material 4, 5 of the article 1 is in the range of about 80 to 350 mg and, preferably, is in the range of about 120 to 330 mg, or about 150 to 300 mg.

- 30 In some embodiments, the total mass of tobacco of the article 1 is in the range of about 80 to 350 mg and, preferably, is in the range of about 120 to 330 mg, or about 150 to 300 mg.

- 35 In some embodiments, the first and/or second aerosol generating material 4, 5 is a solid material.

In some embodiments, the first and second aerosol generating materials are different materials and/or have one or more different properties.

5 The article 1 may have an axial length (shown by arrow 'X' in Fig. 1) of at least 10 mm and, preferably, at least 12, 14, 16, 18, 20, 22 or 23 mm.

The article 1 may have an axial length of at most 36 mm and, preferably, at most 34, 32, 30, 28, 26, 24 or 23 mm.

10 The article 1 may have an axial length in the range of 10 to 36 mm and, preferably, in the range of 14 to 32 mm, in the range of 20 to 26 mm, or in the range of 22 to 24 mm.

15 In some embodiments, one or more of the first sheet material 6, second sheet material 7, the substrate 2, and/or the body of material 3 do not comprise plastic. This makes the article 1 more environmentally friendly, and is also advantageous in embodiments wherein the entire article 1 is heated by the aerosol delivery device 200 (as described below).

20 In some embodiments, the entire article 1 does not comprise plastic. In some embodiments, the body of material 3 or the entire article 1 does not comprise cellulose acetate.

In some embodiments, the article 1 does not comprise cellulose acetate.

25 In some embodiments, the first and/or second aerosol-generating material 4, 5 may comprise, consist of, or essentially consist of, botanical material. The botanical material may be tobacco material. The term "tobacco material" refers to any material comprising tobacco or derivatives or substitutes thereof. The tobacco material may be in any suitable form. The term "tobacco material" may include one or more of tobacco,
30 tobacco derivatives, expanded tobacco, reconstituted tobacco or tobacco substitutes. The tobacco material may comprise one or more of ground tobacco, tobacco fibre, cut tobacco, extruded tobacco, tobacco stem, tobacco lamina, reconstituted tobacco and/or tobacco extract.

35 In some embodiments, the first and/or second aerosol generating material 4, 5 or another material (not shown) of the article 1, for example, another material of the body

of material 3, may comprise one or more aerosol-former materials. For example, the first and/or second aerosol generating material 4, 5 or said another material may comprise one or more constituents capable of forming an aerosol. The aerosol-former material comprises 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. The aerosol-former material can be glycerol or propylene glycol.

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The first and/or second aerosol generating material 4, 5 may be provided as a loose material. For instance, the first aerosol generating material 4 may be a loose material that is held in place in the substrate 2 by adhesive or by being formed with the second sheet material 7. The first and/or second aerosol generating material 4, 5 may, for example, be discrete strands or particles of aerosol generating material. Another example of loose aerosol generating material is beads/pellets of aerosol generating material, including aerosol generating material that has been extruded and then cut into beads/pellets. Yet another example of aerosol generating material is a sheet of aerosol generating material that has been cut into individual pieces, for example, cut into individual strips of aerosol generating material. The sheet of aerosol generating material may be a sheet of reconstituted tobacco.

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For example, the body of material 3 may comprise a sheet of the second aerosol generating material that is gathered to form the body of material 3.

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In some embodiments, the article 1 further comprises a third aerosol generating material. In one such embodiment, the body of material 3 comprises the second and third aerosol generating materials. For example, the body of material 3 may be formed from a sheet/strips of one of the second or third aerosol generating material and beads/dust/fibres of the other one of the second or third aerosol generating materials may be applied to the sheet/strips.

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In another embodiment, the substrate 2 comprises the first and third aerosol generating materials. For example, the second sheet material 7 of the substrate 2 may be formed from one of the first and third aerosol generating materials and

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beads/dust/fibres of the other one of the first and third aerosol generating materials may be applied to the second sheet material 7 (for example, being adhered thereto).

5 In the present example, the second aerosol generating material 4 comprises shredded tobacco material (for example, shredded lamina and/or shredded reconstituted tobacco). The shredded tobacco material is formed into a tobacco rod 3. The patch 2 at least partially circumscribes the rod 3.

10 In the present example, the first aerosol generating material 4 comprises extruded and/or compressed tobacco. In such embodiments, the first aerosol generating material 4 may comprise a single body of aerosol generating material. However, in the present example, the first aerosol generating material 4 comprises a plurality of bodies of aerosol generating material.

15 In the present example, the first aerosol generating material 4 comprises beads/pellets/granules of aerosol generating material (hereinafter referred to as 'beads' of aerosol generating material). The beads 4 may be extruded and/or compressed beads 4.

20 Optionally, one of the first and second aerosol generating materials 4, 5 has a higher density than the other one of the first and second aerosol generating materials 4, 5. It has been found that this causes the denser aerosol generating material to heat up slower when subjected to a given heating power. This means that the less dense material (for example, the second aerosol generating material 5) will initially release
25 one or more volatile compounds (e.g. nicotine) at a higher rate than the more dense material (for example, the first aerosol generating material 4). This also means that the less dense material (for example, the second aerosol generating material 5) will become relatively depleted of said volatile compound(s) more quickly than the more dense material (for example, the first aerosol generating material 4). However, as the less
30 dense material (for example, the second aerosol generating material 5) starts to become relatively depleted of said volatile compound(s), the more dense material (for example, the first aerosol generating material 4) will begin to reach a temperature wherein it begins to release volatile compound(s) at a higher rate. The effect of this is a more consistent release of the volatile compound(s) over the period of consumption of the
35 article 1, with the less dense material (for example, the second aerosol generating material 5) releasing a greater proportion of volatile compound(s) towards the

beginning of the consumption of the article 1 and the more dense material (for example, the first aerosol generating material 4) releasing a greater proportion of volatile compound(s) towards the end of the consumption of the article 1. This is particularly advantageous because the article 1 can be made relatively small whilst still achieving a relatively consistent and/or sufficient release of volatile compound(s) over the period of consumption.

In some embodiments, said one or more volatile compound(s) released by the first aerosol generating material 4 are the same as the volatile compound(s) released by the second aerosol generating material 5.

In some embodiments, the first aerosol generating material 4 comprises aerosol generating material that has been compressed or extruded (without subsequent expansion or with a relatively low/minimal expansion) such that the density of the first aerosol generating material 4 is higher than the density of the second aerosol generating material 5.

In some embodiments, the second aerosol generating material 5 comprises one or more of: tobacco lamina; tobacco stems or reconstituted tobacco. In one such embodiment, the second aerosol generating material 5 comprises a mixture of tobacco lamina and reconstituted tobacco. The second aerosol generating material 5 may comprise shredded or cut material. However, it should be recognised that in other embodiments, the second aerosol generating material 5 comprises a compressed or extruded aerosol generating material that has a lower density than the first aerosol generating material 4 (for example, having a lower compression than the first aerosol generating material 4, which optionally may also be extruded or compressed). For instance, the body of material 3 may comprise an extruded/compressed body of the second aerosol generating material 5.

In some embodiments, the first and second aerosol-generating material 4, 5 may comprise the same material, for example, tobacco, but are processed to have different densities. In one such embodiment, the first and second aerosol generating materials 4, 5 may be in different forms. For example, the second aerosol generating material 5 may be a shredded material (for example, shredded lamina tobacco and/or shredded reconstituted tobacco) that is formed into a body 3, whereas the first aerosol generating material 4 may be compressed or extruded (without or with minimal expansion) such

that the first aerosol generating material 4 has a higher density than the second aerosol generating material 5.

For example, the first aerosol generating material 4 may be in the form of
5 extruded/compressed beads of aerosol generating material (for example, tobacco or another material) and the second aerosol generating material 5 may be in the form of, for example: strands or strips of aerosol generating material (for example, tobacco or another material); a sheet of aerosol generating material that is gathered into a plug or is cut into strips; a rod of aerosol generating material (e.g. a rod formed from cut rag
10 tobacco); or, tobacco lamina and/or stem material that has been formed into a plug. However, it should be recognised that the first second, and/or third aerosol generating material 4, 5 may alternatively have the same form (e.g. both being cut rag tobacco).

It should be recognised that in alternative embodiments, the density of the first aerosol
15 generating material 4 is lower than the density of the second aerosol generating material 5. In yet another embodiment, the densities of the first and second aerosol generating materials 4, 5 are the same.

In some embodiments, the first aerosol-generating material 4 has at least one further
20 different characteristic to the second aerosol generating material 5. The different characteristic may be one or more of form, size, , water content, amount (by weight), material or materials, or proportion of materials that make the first and second aerosol-generating materials 4, 5 (including the recipe of the aerosol generating materials 4, 5 when each is manufactured more than one material). In some embodiments, the first
25 and second aerosol-generating materials 4, 5 do not have a different characteristic, other than being in a different form.

The first and/or second aerosol-generating material 4, 5 may comprise a plurality of strands or strips of aerosol-generating material. For example, the first and/or second
30 aerosol-generating material 4, 5 may comprise a plurality of strands or strips of an aerosolisable material and/or a plurality of strands or strips of an amorphous solid.

The first and/or second aerosol-generating material 4, 5 may comprise a plant based material, such as a tobacco material. The first and/or second aerosol-generating
35 material 4, 5 may be a sheet or shredded sheet of aerosolisable material comprising a plant based material, such as a tobacco material. The sheet material may be processed

such that the second aerosol generating material 5 has a higher density than the first aerosol generating material 4.

5 The plant based material may be a particulate or granular material. In some embodiments, the plant based material is a powder. Alternatively, or in addition, the plant based material may comprise may comprise strips, strands or fibres of tobacco. For example, where tobacco material is provided, the tobacco material may comprise particles, granules, fibres, strips and/or strands of tobacco. In some embodiments, the tobacco material consists of particles or granules of tobacco material.

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The tobacco material of the first and/or second aerosol-generating material 4, 5 may comprise tobacco obtained from any part of the tobacco plant. In some embodiments, the tobacco material comprises tobacco leaf.

15 The sheet or shredded sheet can comprise from 5% to about 90% by weight tobacco leaf.

In some embodiments, both of the first and/or second aerosol-generating material 4, 5 comprise, consist of, or essentially consist of tobacco material.

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In some embodiments, the first and/or second aerosol-generating material 4, 5 comprises a sheet or shredded sheet of aerosolisable material that comprises an aerosol-former material. The aerosol-former material is provided in an amount of up to about 50% on a dry weight base by weight of the sheet or shredded sheet. In some
25 embodiments, the aerosol-former material is provided in an amount of from about 5% to about 40% on a dry weight base by weight of the sheet or shredded sheet, from about 10% to about 30% on a dry weight base by weight of the sheet or shredded sheet or from about 10% to about 20% on a dry weight base by weight of the sheet or shredded sheet.

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The first and/or second aerosol-generating material 4, 5 may comprise a filler. The filler is generally a non-tobacco component, that is, a component that does not include ingredients originating from tobacco. The filler may comprise one or more inorganic filler materials, such as calcium carbonate, perlite, vermiculite, diatomaceous earth,
35 colloidal silica, magnesium oxide, magnesium sulphate, magnesium carbonate, and suitable inorganic sorbents, such as molecular sieves. The filler may be a non-tobacco

fibre such as wood fibre or pulp or wheat fibre. The filler can be a material comprising cellulose or a material comprises a derivate of cellulose. The filler component may also be a non-tobacco cast material or a non-tobacco extruded material. In some embodiments, first and/or second aerosol generating materials 4, 5 are in the form of a sheet or shredded sheet that comprises the filler.

The first and/or second aerosol generating materials 4, 5 can comprise an aerosol modifying agent, such as any of the flavours described herein. In one embodiment, the first and/or second aerosol generating materials 4, 5 comprises menthol. When the first and/or second aerosol generating materials 4, 5 is incorporated into an article 1 for use in an aerosol-provision system, the article may be referred to as a mentholated consumable or article 1. The first and/or second aerosol generating materials 4, 5 can comprise from 0.5mg to 20mg of menthol, from 0.7 mg to 20 mg of menthol, between 1mg and 18mg or between 8mg and 16mg of menthol.

In some embodiments, the article 1 comprises an aerosol-generating composition comprising aerosol-generating material. The aerosol-generating material may comprise the first and/or second aerosol-generating material 4, 5 (and/or the third aerosol generating material).

An 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 (for example, the first and/or second aerosol generating material 4, 5) may, for example, be in the form of a solid, liquid or semi-solid (such as a gel) which may or may not contain an active substance and/or flavourants.

The aerosol-generating material (for example, the first and/or second aerosol generating material 4, 5) may comprise a binder and an aerosol former. Optionally, an active and/or filler may also be present. Optionally, a solvent, such as water, is also present and one or more other components of the aerosol-generating material may or may not be soluble in the solvent. In some embodiments, the aerosol-generating material (for example, the first and/or second aerosol generating material 4, 5) is substantially free from botanical material. In particular, in some embodiments, the aerosol-generating material (for example, the first and/or second aerosol generating material 4, 5) is substantially tobacco free.

In some embodiments, the composition of the first and/or second aerosol generating materials 4, 5 comprises an aerosol-forming “amorphous solid”. The amorphous solid may be a “monolithic solid”. 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 50wt%, 60wt% or 70wt% of amorphous solid, to about 90wt%, 95wt% or 100wt% of amorphous solid. The amorphous solid may be substantially non-fibrous.

10 In some examples, the amorphous solid comprises:
- 1-60 wt% of a gelling agent;
- 0.1-50 wt% of an aerosol-former material; and
- 0.1-80 wt% of a flavour;
wherein these weights are calculated on a dry weight basis.

15 In some further embodiments, the amorphous solid comprises:
- 1-50 wt% of a gelling agent;
- 0.1-50 wt% of an aerosol-former material; and
- 30-60 wt% of a flavour;
20 wherein these weights are calculated on a dry weight basis.

The aerosol-generating material (for example, the first and/or second aerosol generating material 4, 5) may comprise or be an aerosol-generating film. The aerosol-generating film may be formed by combining a binder, such as a gelling agent, with a solvent, such as water, an aerosol-former and one or more other components, such as active substances, to form a slurry and then heating the slurry to volatilise at least some of the solvent to form the aerosol-generating film. The the slurry may be heated to remove at least about 60 wt%, 70 wt%, 80 wt%, 85 wt% or 90 wt% of the solvent. The aerosol-generating film may be a continuous film or a discontinuous film, such an arrangement of discrete portions of film on a support. The aerosol-generating film may be substantially tobacco free.

The aerosol-generating film may comprise or be a sheet, which may optionally be shredded to form a shredded sheet.

35

The aerosol-generating material may comprise one or more active substances and/or flavours, one or more aerosol-former materials, and optionally one or more other functional material.

- 5 In each of the embodiments of article 1 described herein, the article may comprise such a first and/or second aerosol generating material 4, 5 (and/or third aerosol generating material), and may comprise such an aerosol-generating composition.

10 The amorphous solid material may be provided in sheet or in shredded sheet form. The amorphous solid material may take the same form as the sheet or shredded sheet of aerosolisable material.

In some embodiments, the aerosol generating material, for example, the first or second aerosol generating material 4, 5 comprises: from about 10 to about 50 wt% aerosol-
15 former material; from about 15 to about 60 wt% gelling agent; and optionally filler; wherein the wt% values are calculated on a dry weight basis.

The first and/or second aerosol generating materials 4, 5 can comprise a paper reconstituted tobacco material. The composition can alternatively or additionally
20 comprise any of the forms of tobacco described herein. The first and/or second aerosol generating materials 4, 5 can comprise a sheet or shredded sheet comprising tobacco material comprising between 10% and 90% by weight tobacco leaf, wherein an aerosol-former material is provided in an amount of up to about 20% by weight of the sheet or shredded sheet, and the remainder of the tobacco material comprises paper
25 reconstituted tobacco.

Where the first and/or second aerosol generating material 4, 5 comprises an amorphous solid material, the amorphous solid material may be a dried gel comprising menthol.

30

In some embodiments, the first and/or second aerosol generating material 4, 5 comprises an extruded aerosol generating material that is then cut into beads of pellets.

Referring now to Fig. 8, an alternative article 1 for an aerosol provision device 200 is
35 shown. The article 1 has similar features to the article 1 described above in relation to Figs. 1 to 7, with like features retaining the same reference numerals, and may have any

of the variations of features described herein. The difference is that, the substrate 2 comprises the first aerosol generating material 4, instead of the first aerosol generating material 4 being applied to a surface of the second sheet material 7. In one embodiment, the substrate 2 comprises a second sheet material 7 that comprises the first aerosol generating material 4. For example, the second sheet material 7 may be formed with the first aerosol generating material 4. The first aerosol generating material 4 may be integral to the second sheet material 7.

In one such embodiment, the substrate 2 comprising the first aerosol generating material 4 is printed on to the first sheet material 6. By 'printing' it is meant that the first aerosol generating material 4 is applied in a fluid form to the first sheet material 6 and allowed to dry or is cured.

In one such embodiment, the second sheet material 7 is formed from a slurry, wherein the first aerosol generating material 4 is provided in the slurry and then the second sheet material 7 is formed from the slurry. For example, the second sheet material 7 may be cast from a slurry comprising the first aerosol generating material 4..

In another embodiment (not shown), the second sheet material 7 comprises the first aerosol generating material 4 (for example, being formed from a slurry comprising the first aerosol generating material 4) and wherein a third aerosol generating material is applied to a surface of the second sheet material 7 (for example, being retained in position by an adhesive).

Referring now to Fig. 9, another article 1 for an aerosol provision device 200 is shown. The article 1 has similar features to the article 1 described above in relation to Figs. 1 to 7, with like features retaining the same reference numerals, and may have any of the variations of features described herein. The difference is that the substrate 2 of the embodiment of Fig. 9 extends over the entire axial length (shown by arrow 'X') of the article 1. In the present embodiment, the second sheet material 7 and first aerosol generating material 4 both extend over substantially the entire axial length X of the article 1. However, it should be recognised that in alternative embodiments, the second sheet material 7 may extend over substantially the entire axial length X of the article 1 whereas the first aerosol generating material 4 may extend over only a portion of the axial length of the article 1.

Embodiments wherein the first aerosol generating material 4 extends over the entire axial length X of the article 1 (or the entire axial length of the body of material 3) provide the advantage of increasing the amount of first aerosol generating material 4 in the article 1 and thus the amount of aerosol that can be generated for a given axial
5 length X of the article 1.

Embodiments wherein the first aerosol generating material 4 over only a portion of the entire axial length X of the article 1 provide the advantage that the first aerosol generating material 4 is not visible from the ends P, D of the article 1 and also helps to
10 reduce the possibility of the first aerosol generating material 4 from falling out of the ends P, D of the article 1.

In some embodiments, the apertures (not shown) are cut into the substrate 2 and/or the first sheet material 6. The apertures may be formed in the first sheet material 6.
15 Specifically, the apertures may be formed in a region underlying the substrate 2. The apertures are formed all the way through the first sheet material and, optionally, through the substrate 2. The apertures may prevent the substrate from separating from the first sheet material 6 when the article 1 is heated in use.

20 Referring now to Figs. 10 to 12, an embodiment of an aerosol provision device 200 is shown.

The article 1 is configured for use in an aerosol provision device 200 (see Fig. 10) comprising an aerosol generator in the form of a heating element 203 for heating the
25 article 1. In the present example, the heating element 203 at least partially surrounds a heating area 202, for example, a heating chamber 202. The heating element 203 may be resistively and/or inductively heated.

In other embodiments (not shown), the heating element 203 instead comprises a blade
30 or pin, for insertion into the article 1, for example, the blade or pin may be inserted through the body of material 3. In other embodiments (not shown), the consumable 1 may comprise the heating element which, for example, may be embedded in the body of material 3.

35 In Fig. 10, the components of an embodiment of an aerosol provision device 200 are shown in a simplified manner. Particularly, the elements of the aerosol provision device

200 are not drawn to scale in Fig. 10. Elements that are not relevant for the understanding of this embodiment have been omitted to simplify Fig. 10.

5 In the example of Fig. 10, the aerosol provision device 200 is a non-combustible aerosol provision device 200. The non-combustible aerosol provision device 200 comprises a housing 201 comprising an area 202 for receiving an article 1.

10 When the article 1 is received into the heating area 202, at least a portion of the article 1 comes into thermal proximity with the heater 203. Thus, at least a portion of the aerosol generating material 4, 5 is in thermal proximity with the heater 203. In some embodiments, the heater 203 is spaced from the article 1, for example, circumscribing the article 1 but having a larger diameter and being spaced therefrom. In other embodiments, the heater 203 is in direct contact with the article 1, for example, contacting an outer surface of the first sheet material 6 of the article . In another
15 embodiment, the heater 203 comprises a blade or pin that contacts the inside of the article 1, for example, contacting the body of material 3 and/or the substrate 2.

When the article 1 is heated, the first and/or second aerosol generating material 4, 5 will release one or more volatile compounds and may release a range of volatile
20 compounds at different temperatures. By controlling the maximum operation temperature of the electrically heated aerosol generating system 200, the selective release of undesirable compounds may be controlled by preventing the release of select volatile compounds.

25 As shown in Fig. 11, within the housing 201 there is an electrical energy supply 204, for example a rechargeable lithium ion battery. A controller 205 is connected to the heater 203, the electrical energy supply 204, and a user interface 206, for example a button or display. The controller 205 controls the power supplied to the heater 203 in order to regulate its temperature. Typically, the aerosol-forming substrate is heated to a
30 temperature of between 250 and 450 degrees centigrade.

Fig. 12 is a schematic cross-section of a non-combustible aerosol-provision device 200 of the type shown in Fig. 10, with the article 1 received in the heating area 202 of the device 200 for heating by the heater 203. The non-combustible aerosol provision
35 device 200 is illustrated receiving the aerosol-generating article 1 for consumption of the aerosol-generating article 1 by a user.

The housing 201 of non-combustible aerosol provision device 200 defines an area 202 in the form of a cavity, open at the proximal end (or mouth end), for receiving an aerosol-generating article 1 for consumption by a user.

5

In the present example, the aerosol-provision device 200 comprises a mouthpiece 207 that is detachable from the remainder of the device 200 to allow access to the area 202 such that an article 1 can be inserted into and removed from the area 202. Once a article 1 has been provided in the area 202, the mouthpiece 207 can be reattached. In
10 some embodiments, the mouthpiece 207 is removably attached to the housing 201 of the device 200, for example, by a screw thread or bayonet connection.

15

As a user draws on the mouthpiece 207, air is drawn into the article 1 and the volatile substances condense to form an inhalable aerosol. This aerosol passes through the mouthpiece 207 of the device 200 and into the user's mouth.

20

It should be recognised that in other embodiments the mouthpiece 207 of the device 200 may be omitted. In some embodiments, the article 1 may form a mouthpiece and may come into contact with a user's mouth.

25

In the above described embodiments, the body of material 3 extends between the ends P, D of the article 1. However, it should be recognised that in alternative embodiments (not shown), the article 1 may comprise one or more further segments, for example, a further segment upstream or downstream of the body of material 3.

30

For example, an alternative embodiment of an article 1 is shown in Fig. 13 which further comprises a cooling section 25, also referred to as a cooling element, positioned immediately downstream of the body of material 3. In the present example, the cooling element 25 is immediately downstream of and adjacent to the body of material 3. In
30 some such embodiments, the cooling element 25 is in an abutting relationship with the body of material 3. The article 1 may additionally or alternatively include a further body of material 26 downstream of the cooling element 25. The further body of material 26 may comprise flavouring and/or filtering material and/or may be provided to obscure the view of the cooling element 25.

35

The cooling element 25 comprises a hollow channel, having an internal diameter of between about 1 mm and about 4 mm, for example between about 2 mm and about 4 mm. The hollow channel may have an internal diameter of about 3 mm. The hollow channel extends along the full length of the cooling element 25. The cooling element 25 may comprise a single hollow channel. In alternative embodiments, the cooling element 25 can comprise multiple channels, for example, 2, 3 or 4 channels. The single hollow channel may be substantially cylindrical, although in alternative embodiments, other channel geometries/cross-sections may be used. The hollow channel can provide a space into which aerosol drawn into the cooling element 25 can expand and cool down. The cooling element 25 may be configured to limit the cross-sectional area of the hollow channel/s, to limit tobacco displacement into the cooling element 25, in use.

The cooling element 25 may have a wall thickness in a radial direction. The wall thickness of the cooling element 25, for a given outer diameter of cooling element 25, defines the internal diameter for the chamber surrounded by the walls of the cooling element 25. The cooling element 25 can have a wall thickness of at least about 1.5 mm and up to about 2 mm. In the present example, the cooling element 25 has a wall thickness of about 2 mm.

The cooling element 25 may be formed from filamentary tow. Other constructions can be used, such as a plurality of layers of paper which are parallel wound, with butted seams, to form the cooling element 25; or spirally wound layers of paper, cardboard tubes, tubes formed using a papier-mâché type process, moulded or extruded plastic tubes or similar. The cooling element 25 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 article 1 is in use.

The wall material of the cooling element 25 can be relatively non-porous, such that at least 90% of the aerosol generated by the aerosol generating material 3 passes longitudinally through the one or more hollow channels rather than through the wall material of the cooling element 25. For instance, at least 92% or at least 95% of the aerosol generated by the first and/or second aerosol generating material 4, 5 can pass longitudinally through the one or more hollow channels.

The cooling element 25 can be configured to provide a temperature differential of at least 40 degrees Celsius between a heated volatilised component entering a first,

upstream end of the cooling element 25 and a heated volatilised component exiting a second, downstream end of the cooling element 25. The cooling element 25 can be configured to provide a temperature differential of at least 60 degrees Celsius, or at least 80 degrees Celsius, or at least 100 degrees Celsius between a heated volatilised component entering a first, upstream end of the cooling element 25 and a heated volatilised component exiting a second, downstream end of the cooling element 25. This temperature differential across the length of the cooling element 25 protects the temperature sensitive body of material 26 from the higher temperatures of the aerosol-generating material 4, 5 when it is heated.

The body of material 26 defines a substantially cylindrical overall outer shape and is wrapped in a plug wrap 28. The plug wrap 28 can have a basis weight of less than 50 gsm, or between about 20 gsm and 40 gsm. The plug wrap 28 can have a thickness of between 30 μm and 60 μm , or between 35 μm and 45 μm . The plug wrap 28 may be a non-porous plug wrap, for instance having a permeability of less than 100 Coresta units, for instance less than 50 Coresta units. However, in other embodiments, the plug wrap 28 can be a porous plug wrap, for instance having a permeability of greater than 100 Coresta Units or 200 Coresta Units.

The cooling element 25 and/or body of material 26 may form a mouthpiece of the article 1 that is configured to be received within the mouth of the user. In some embodiments, the mouthpiece 207 of the device 200 may be omitted.

In some embodiments, a tipping paper (not shown) is wrapped around the cooling element 25 and body of material 26 and also circumscribes the first sheet of material 6 that circumscribes the substrate 2 and body of material 3, and may be connected to these components by adhesive. Thus, the tipping paper connects the cooling element 25 and body of material 26 to the body of material 3. In other embodiments, the tipping paper is omitted and instead the first sheet material 6 extends to circumscribe the cooling element 25 and body of material 26 to connect these components to the body of material 3 and substrate 2.

Referring now to Fig. 15, a block diagram depicting an exemplary embodiment of a method 100 of manufacturing an article 1 for an aerosol provision device is shown.

The method 100 comprises the step (S1) of providing a first sheet material 6. The method 100 also comprises the step (S2) of providing a substrate 2 comprising a first aerosol generating material 4, wherein the substrate 2 is adhered to the first sheet material 6. The method 100 further comprises the step (S3) of arranging the first sheet material 6 with the substrate adhered thereto such that the first sheet material 6 surrounds the substrate 2. In the present example, the substrate 2 is a patch 2.

In some embodiments, the substrate 2 comprises a second sheet material 7 and providing the substrate 2 comprises attaching the second sheet material 7 to the first sheet material 6.

The second sheet material 7 may be a cast sheet.

In some embodiments, the second sheet material 7 comprises the first aerosol generating material 4. For example, the second sheet material 7 may be formed with the first aerosol generating material 4. The first aerosol generating material 4 may be integral to the second sheet material 7. In one such embodiment, the second sheet material 7 is formed from a slurry, wherein the first aerosol generating material 4 is provided in the slurry and then the second sheet material 7 is formed from the slurry. For example, the second sheet material 7 may be cast from a slurry comprising the first aerosol generating material 4.

In some embodiments, the first aerosol generating material 4 is attached to a surface of the second sheet material 7 and, preferably, is adhered to the surface of the second sheet material 7.

The first aerosol generating material 4 may be attached to the surface of the second sheet material 7 before or after attaching the second sheet material 7 to the first sheet material 6.

The first aerosol generating material 4 may be applied to the first sheet material 6 as or in slurry that is then dried to form a layer on the first sheet material 6.

In some embodiments, the second sheet material 7 comprises one or more of: paper, card and/or aerosol generating material.

In some embodiments, providing the first sheet material 6 comprises providing a web of first sheet material.

5 In some embodiments, providing the substrate 2 comprises applying the substrate 2 to the web of first sheet material 6.

In some embodiments, applying the substrate 2 to the web of first sheet material 6 comprises applying a web of the second sheet material 7 to the web of first sheet material 6. For example, continuous webs of the first and second sheet materials 6, 7
10 may be brought together and adhered together.

In some embodiments, applying the substrate 2 to the web of first sheet material 6 comprising applying a plurality of portions of second sheet material 7 to the web of first sheet material 6.
15

In some embodiments, the plurality of portions of second sheet material 7 are spaced from each other on the web of first sheet material 6.

In some embodiments, the portions of second sheet material 7 are discrete. The portions of second sheet material 7 may be spaced from each other in a direction along the conveyance path of the web of first sheet material 6.
20

In some embodiments, an edge of the substrate 2 is spaced from an edge 6C of the first sheet material 6 such that a region 8 of the first sheet material 6 is not covered by the substrate 2 and, preferably, the method comprises applying adhesive to said region 8.
25

In some embodiments, the substrate 2 comprises opposite third and fourth edges 2C, 2D and the first sheet material 6 comprises opposite third and fourth edges 6C, 6D. The third edge 2C of the patch 2 may be spaced from the third edge 6C of the first sheet material 6 such that the first sheet material 6 comprises the region 8 that is not covered by the patch 2. The region 8 may be arranged to overlap the fourth edge 6D of the first sheet material 6 and may be adhered to an outer surface of the first sheet material 6. The region 8 not being covered by the patch 2 facilitates adhesion of the inside surface of the region 8 of the first sheet material 6 to the outer surface of the first sheet material
30 6. The method 100 may comprise applying adhesive to the region 8.
35

In some embodiments, the first sheet material 6 has a permeability in the range of at most 100 Coresta Units and, preferably, at most 90, 80, 70, 60 or 50 Coresta Units.

5 In some embodiments, the first sheet material 6 has a thickness in the range of 20 to 100 microns.

In some embodiments, the first sheet material 6 forms an exterior surface 1A of the article 1.

10 In some embodiments, the method 100 comprises providing a continuous web of first sheet material 6. The web may be fed along a conveyance path. The web of the first sheet material 6 may be supplied from a reel.

15 In some embodiments, the first aerosol generating material 4 comprises aerosol generating material dust and/or aerosol generating material fibres.

In some embodiments, the first aerosol generating material 4 comprises extruded and/or compressed aerosol generating material.

20 In some embodiments, the first aerosol generating material 4 comprises beads 4.

In some embodiments, the beads 4 have a diameter in the range of 0.5 to 3 mm and, preferably, in the range of 1 to 2 mm.

25 In some embodiments, the beads 4 have a particle size (measured by sieving) in the range of 0.5 to 3 mm, and preferably, in the range of 1 to 2 mm.

In some embodiments, the first aerosol generating material 4 comprises, consists of, or essentially consists of tobacco material.

30 In some embodiments, the tobacco material of the first and/or second aerosol generating material 4, 5 is derived only from tobacco lamina and no other types of tobacco material.

35 In some embodiments, the first and/or second aerosol generating material 4, 5 comprises tobacco lamina and reconstituted tobacco.

In some embodiment, the first and second aerosol generating materials 4, 5 together have an average nicotine level in the range of 0.5% to 2.5% by weight of the first and second aerosol generating materials 4, 5 and, preferably, in the range of 1% to 2.1%.

5

In some embodiments, the first and/or second aerosol generating material 4, 5 is a solid material.

In some embodiments, the article 1 does not comprise plastic.

10

In some embodiments, the article 1 does not comprise cellulose acetate.

In some embodiments, the first and second aerosol generating materials 4, 5 are manufactured from the same aerosol generating starter materials that are processed to have different forms.

15

In some embodiments, the article 1 further comprises a second aerosol generating material 5.

In some embodiments, the second aerosol generating material 5 has a higher or lower density than the first aerosol generating material 4.

20

In some embodiments, the second aerosol generating material 5 comprises, consists of, or essentially consists of tobacco material.

25

In some embodiments, the second aerosol generating material 5 comprises shredded tobacco and/or reconstituted tobacco.

In some embodiments, the substrate 2 comprises the second aerosol generating material 5.

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In some embodiments, the second sheet material 7 comprises the first and/or second aerosol generating materials 4, 5. For example, the second sheet material 7 may be formed from a slurry that comprises the first and/or second aerosol generating materials 4, 5.

35

In some embodiments, the first sheet material 6 and substrate 2 are arranged such that the substrate 2 is provided on an inside surface of the first sheet material 6 once formed into an article 1. In some embodiments, the first sheet material 6 circumscribes, or at least partially circumscribes, the substrate 2.

5

In some embodiments, the first and/or second aerosol generating materials 4, 5 are applied to a surface of the second sheet material 7.

10 In some embodiments, the second sheet material 7 comprises one of the first and second aerosol generating materials 4, 5 and the other one of the first and second aerosol generating materials 4, 5 is applied to a surface of the second sheet material 7.

15 In some embodiments, arranging the first sheet material 6 with the substrate 2 adhered thereto comprises providing the first sheet material 6 and substrate 2 around at least a portion of a body of material 3 and, preferably, comprises wrapping the first sheet material 6 with substrate 2 about the body of material 2.

20 The method 100 may comprise forming the body of material 3 and then wrapping the first sheet material 6 and substrate 2 about the body of material 3. In another embodiment, the body of material 3 is formed at the same time as wrapping the first sheet material 6 and substrate 2 about the body of material 3, for example, by feeding the first sheet material 6 and substrate through a garniture together with the material that is formed into the body of material 3.

25 In some embodiments, the substrate 2 circumscribes the entire circumference of the body of material 3. In some embodiments, the first sheet material 6 circumscribes the body of material 3. In some embodiments, the substrate 2 circumscribes the body of material 3.

30 In some embodiments, the body of material 3 comprises a third sheet material that is gathered to form the body of material 3. In some embodiments, the third sheet material is crimped and/or cut into strips.

In some embodiments, the substrate 2 is in direct contact with the body of material 3.

35

In some embodiments, the body of material 3 comprises a tobacco rod. For example, the body of material 3 may comprise shredded tobacco material that is formed into a rod. In some embodiments, the body of material 3 comprises cut rag tobacco that is formed into a rod.

5

In some embodiments, the body of material 3 comprises the second aerosol generating material 5.

10 In some embodiments, the body of material 3 comprises a third sheet material (not shown) and, preferably, the method 100 comprises gathering the third sheet material to form the body of material 3. The third sheet material may optionally be crimped and/or cut into strips.

15 In some embodiments, the body of material 3 comprises a tobacco rod. For example, the body of material 3 may comprise shredded tobacco material that is formed into a rod. In some embodiments, the body of material 3 comprises cut rag tobacco that is formed into a rod.

20 In some embodiments, the article 1 comprises a third aerosol generating material. For example, the substrate 2 or body of material 3 may comprise the third aerosol generating material. In some embodiments, the substrate 2 comprises a second sheet material 7 that comprises the first and/or third aerosol generating materials. For example, the second sheet material 7 may be formed from a slurry that comprises the first and/or third aerosol generating materials. In some embodiments, the first and/or
25 third aerosol generating materials are applied to a surface of the second sheet material 7. In some embodiments, the second sheet material 7 comprises one of the first and third aerosol generating materials and the other one of the first and third aerosol generating materials is applied to a surface of the second sheet material 7.

30 In another embodiment, the substrate 2 is provided axially upstream or downstream of the body of material 3. In another embodiment the article 1 does not comprise a body of material 3. For example, the substrate 2 may be arranged to define a tube that surrounds an empty space. The empty space may form a passage for the flow of gas therethrough. In another example, the substrate 2 extends about a component other
35 than a body of material 3.

It should be recognised that the first and second aerosol generating materials 4, 5 and the body of material 3 may have a variety of features and/or forms, including any of the features described above, including described above in relation to Figs. 1 to 14.

- 5 Referring now to Figs. 15A to 15G, an embodiment of a method of manufacturing an article 1 for an aerosol provision device 200 is shown. An example of an apparatus 300 for carrying out the method is shown in Fig. 16.

10 In a first step (shown in Fig. 15A), a continuous web W1 of a second sheet material 7 is provided. In the present example, the second sheet material 7 comprises a strip of paper. The continuous web W1 may be supplied from a first reel S1.

In a second step (shown in Fig. 15B), a first aerosol generating material 4 is applied to a surface of the web W1 of the second sheet material 7. For example, an adhesive may be
15 applied to the web W1 and/or to the first aerosol generating material 4 such that the first aerosol generating material 4 is adhered to the web W1. In the present example, the apparatus 300 comprises an applicator 301 that sprays the adhesive onto the web W1 and then supplies the first aerosol generating material 4 under the effect of gravity, for example, using a hopper. In another embodiment, the first aerosol generating
20 material 4 is supplied pneumatically, and optionally may be sprayed on to the web W1.

The first aerosol generating material 4 may be supplied as loose aerosol generating material 4, for example, loose beads/fibres/dust of the first aerosol generating material 4.

25

The second sheet material 7 and first aerosol generating material 4 may together form a substrate 2.

30 It should be recognised that in an alternative embodiment, the second sheet material 7 comprises the first aerosol generating material 4. For example, the second sheet material 7 may be cast from a slurry that comprises the first aerosol generating material 4.

35 In a third step (shown in Fig. 15C), a plurality of successive cuts are provided in the web W1 to form a plurality of individual portions of the substrate 2. In the present example, the web W1 is cut along successive cut lines Z1-Z1 (shown in Fig. 15C). The cuts may be

formed using a cutting device 302. For example, the cutting device 302 may comprise a cutting drum, one or more cutting knives or one or more lasers. In some embodiments, each individual portion forms a respective patch 2.

5 In a fourth step (shown in Fig. 15D), the plurality of individual portions of the substrate 2 are spaced apart from each other. In the present example, the apparatus 300 comprises a first belt conveyor 303 and a second belt conveyor 304 that operates at a faster speed than the first belt conveyor 303. The individual portions of the substrate 2 are conveyed from the first belt conveyor 303 to the second belt conveyor 304, wherein
10 each individual portion of the substrate 2 is accelerated and becomes spaced from the upstream portions of substrate 2. In an alternative embodiment (not shown), the individual portions of substrate 2 are spaced apart using a spacing drum. In yet another embodiment, the individual portions of substrate 2 are not spaced apart from each other.

15 In a fifth step (shown in Fig. 15E), the individual portions of substrate 2 are adhered to a web W2 of a first sheet material 6. The individual portions of substrate 2 are fed from the second belt conveyor 304 and onto the web W2 of first sheet material 6 as the web W2 passes along a conveyance path. The web W2 may be supplied from a second reel
20 S2.

The adhesive may be applied to the web W2 of the first sheet material 6 and/or to the substrate 2 (for example, being applied to the second sheet material 7 of the substrate 2).

25 In the present example, the adhesive is applied by an adhesive applicator 305. The adhesive applicator 305 may be configured to spray the adhesive on to the first sheet material 6 and/or substrate 2 as it is fed along a conveyance path and passes the adhesive applicator 305, or may apply the adhesive using one or more brushes or
30 rollers. In another embodiment, the adhesive is pre-applied to the web W2 or substrate 2 as a hot melt adhesive, and wherein the fifth step comprises heating the adhesive to activate the adhesive.

In a sixth step (shown in Fig. 15F), the web W2 of the first sheet material 6 with the
35 individual portions of substrate 2 thereon are combined with a second aerosol generating material 5 to form a continuous rod R.

In the present example, the second aerosol generating material 5 is tobacco material that is fed from a tobacco supply S3. The tobacco may comprise, for example, shredded tobacco. In other embodiments, the tobacco material may comprise a sheet of tobacco
5 (for example, reconstituted tobacco) that is gathered to form the body of material 3.

In the present example, the web W2 of the first sheet material 6 with the individual portions of substrate 2 thereon are combined with the second aerosol generating material 5 in a wrapping apparatus 306.

10

In one embodiment, the wrapping apparatus 306 may comprise, for example, a garniture tongue 307, a garniture belt (not shown) and a belt drive (not shown) that drives the garniture belt (not shown). The belt drive may comprise, for example, one or more pulleys or wheels that are driven by an electric motor to drive the garniture belt.
15 The garniture belt extends through the garniture tongue 307. The web W2 of first sheet material 6 with the individual portions of substrate 2 thereon (hereinafter 'the arrangement') overlies the garniture belt such that operation of the belt drive feeds the arrangement through the garniture tongue 307. The garniture tongue 307 comprises a first portion (not shown) that is shaped to form the arrangement into a U-shape as it
20 passes through the garniture tongue 307. The second aerosol generating material 5 is fed into the garniture tongue 307 to be received in the U-shaped portion of the arrangement of the web W2 and substrate 2.

The U-shaped arrangement then passes through a second portion (not shown) of the
25 garniture tongue 307 that is shaped to fold a first longitudinal edge (not shown) of the web W2 over an opposite second longitudinal edge (not shown) such that the arrangement exiting the garniture tongue 307 is formed into a cylinder. In the present example, said first longitudinal edge of the web W2 is proximate the uncovered region 8 of the web W2 such that the uncovered region 8 of the web W2 is adhered to an outer
30 surface of the web W2 to form a cylinder. In some embodiments, the first portion of the garniture tongue 307 is generally U-shaped in cross-section and the second portion of the garniture tongue 307 is generally O-shaped in cross-section.

As the second aerosol generating material 5 passes through the garniture tongue 307, it
35 is formed into a body of material 3. In the present example, the second aerosol generating material 5 is formed into a cylinder. However, it should be recognised that

in alternative embodiments the body of material 3 may have a different shape, for example, having a square, rectangular, oval or triangular cross-section.

5 In some embodiments, the wrapping apparatus 306 further comprises an adhesive applicator (not shown) configured to apply a line of adhesive to the web W2 (for example, to the uncovered region 8) such that when the web W2 passes through the second portion (not shown) of the garniture tongue 307, the first longitudinal edge is folded over the opposite second longitudinal edge of the web W2 and is glued in position by the line of adhesive. Thus, a continuous rod R is formed comprising the
10 body of material 3 that is intermittently circumscribed by the individual portions of the substrate 2 and is continuously circumscribed by the first wrapping material 6.

15 In alternative embodiments (not shown), the wrapping apparatus 306 has a different arrangement, for example, comprising one or more drums or conveyor belts that are configured to convey portions of the first wrapping material 6, substrate 2 and second aerosol generating material 5 such that the components are combined into a rod.

20 In a seventh step (shown in Fig. 15G), the continuous rod R is cut to form individual articles 1 or to form multiple-length articles 1 that may then subsequently cut to form individual articles 1 (before or after optionally being combined with further components). In the present example, the continuous rod R is cut along dashed line Zz-Zz (shown in Fig. 15F) by a cutting device 308, for example, a cutting drum, reciprocating blade/knife or laser.

25 The method described above is thus a continuous process wherein a continuous rod R is formed and then the end of the continuous rod R is repeatedly cut to form a plurality of articles 1.

30 It has been found that providing the first aerosol generating material 4 on a substrate 2 allows for a more accurate positioning of the first aerosol generating material 4 and thus for a more consistent manufacturing of the articles 1.

35 It should be recognised that various steps of the method described above may be modified, performed in a different order, or omitted entirely. For example, in one alternative embodiment the steps of cutting and spacing individual portions of the substrate 2 may be omitted. Instead, the first aerosol generating material 4 is applied to

the web W1 of the second sheet material 7 which is then combined with the web W2 of the first sheet material 6, and subsequently fed through a wrapping apparatus 306 to form an article 1 wherein the substrate 2 extends between the first and second ends of the body of material 3 (for example, to produce an article 1 of the configuration shown in Fig. 9).

In another alternative, the body of material 3 is pre-formed and then the arrangement of the substrate 2 and first sheet material 6 are wrapped about the body of material 3. In some embodiments (not shown), individual portions of first sheet material 6 are formed that each has an individual portion of substrate 2 adhered thereto, wherein the individual portions of first sheet material 6 and respective individual portions of substrate 2 are each wrapped about a respective body of material 3.

Referring now to Fig. 17, an alternative article 1 for an aerosol provision device 200 is shown. The article 1 has similar features to the article 1 described above in relation to Figs. 1 to 7, with like features retaining the same reference numerals, and may have any of the variations of features described herein. The difference is that the article 1 does not comprise a body of material 3. Instead, the first sheet material 6 with substrate 2 thereon are formed into a cylinder such that the substrate 2 surrounds an empty space 10. The space 10 forms a passage 10 that allows gas to pass through the article 1.

Referring now to Fig. 18, an alternative article 1 for an aerosol provision device 200 is shown. The article 1 has similar features to the article 1 described above in relation to Figs. 1 to 7, with like features retaining the same reference numerals, and may have any of the variations of features described herein. The difference is that the substrate 2 does not circumscribe the body of material 3. Instead, the body of material 3 is provided axially upstream of the substrate 2.

In an alternative embodiment (not shown), the body of material 3 may be provided downstream of the substrate 2. In yet another embodiment (not shown), a first body of material may be provided upstream of the substrate 2 and a second body of material may be provided downstream of the substrate 2.

The body of material 3 being provided upstream and/or downstream of the substrate 2 facilitates the body of material 3 being heated separately to the substrate. For instance, a first heater may be arranged to heat the body of material 3 and a second heater may

be arranged to heat the substrate 2. Thus, the substrate 2 and body of material 3 may be heated at different times and/or heated to different temperatures.

5 In each of the above embodiments that are described as having a body of material 3, the body of material is described as comprising, consisting of, or essentially consisting of a second aerosol generating material 5. However, it should be recognised that in other embodiments the body of material 3 does not comprise, consist of, or essentially consist of any aerosol generating material. For instance, the body of material 3 may be formed from a paper sheet that is gathered to form a body of material 3, without any aerosol
10 generating material. In another embodiment, the body of material 3 may be formed from a sheet that does not comprise any aerosol generating material.

In the articles 1 shown in Figs. 1, 8, 9, 13, and 15G, the body of material 3 is shown being compressed radially inwardly in the region of the substrate 2. That is, when the
15 substrate 2 and first sheet material 6 are wrapped about the body of material 3, the substrate 2 deforms the body of material 3 radially inwardly to compress the body of material 3. However, in other embodiments, less material is provided in the portion of the body of material 3 that is wrapped in the substrate 2 in order to accommodate the substrate 2 without the body of material 3 being compressed. In one such embodiment,
20 a circumferential groove may be provided in the body of material 3 that accommodates the substrate 2. In other embodiments, the body of material 3 is a cylindrical rod and the substrate 2 and first sheet material 6 are wrapped about the body of material 3 such that the cylindrical rod is not compressed or is substantially not compressed by the substrate 2.

25 In all of the above examples, the first and/or second aerosol generating material 4, 5 may comprise, consist of, or essentially consist of extruded or compressed bodies of tobacco material and, preferably, the extruded or compressed bodies of tobacco material comprise beads of tobacco material.

30 In each of the above examples, the first and/or second aerosol generating material 4, 5 may comprise, consist of, or essentially consist of reconstituted tobacco and, preferably, comprises a shredded sheet of reconstituted tobacco.

35 In all of the above examples, the first and/or second aerosol generating material 4, 5 may comprise, consist of, or essentially consist of lamina tobacco.

In all of the above examples, the first and/or second aerosol generating material 4, 5 may comprise, consist of, or essentially consist of reconstituted tobacco and lamina tobacco and, preferably, the reconstituted tobacco and lamina tobacco are mixed together.

In all of the above examples, the body of material 3 may comprise, consist of, or essentially consist of a sheet of aerosol generating material that is gathered to form the body of material 3 and, preferably, the sheet material is crimped. Preferably, the sheet is a sheet of reconstituted tobacco.

In all of the above examples, the first and/or second aerosol generating material 4, 5 may comprise, consist of, or essentially consist of a sheet of aerosol generating material that is cut into strips. Preferably, the sheet is a sheet of reconstituted tobacco. For example, the second aerosol generating material 5 may be cut into strips that are then arranged to form the body of material 3.

In all of the above examples, the first and/or second aerosol generating material 4, 5 may comprise tobacco material, and wherein the tobacco material is manufactured only from tobacco lamina and no other types of tobacco material.

In all of the above examples, the first and second aerosol generating materials 4, 5 are manufactured from the same aerosol generating starter materials that are processed to have different forms.

In each of the examples of article described above (including each of the articles shown in Figs. 1 to 9, 12, 13, 15G, 17 and 18), the first and second aerosol-generating materials 4, 5 may have different densities. Otherwise, the aerosol-generating materials of the article may be the same or different. In other embodiments, the densities of the first and second aerosol-generating materials 4, 5 may be the same.

In some embodiments, the article further comprises a third aerosol generating material, which may have a different density to the first and/or second aerosol generating material.

It has been found that providing different densities of first and second aerosol generating materials 4, 5 means that the higher density material heats up slower when both materials are exposed to the same heating and thus the higher density material will release its volatile compounds (e.g. nicotine) at a slower rate than the lower density material. In some embodiments, the first aerosol-generating material 4 has a greater density than the second aerosol-generating material 5 so that the first aerosol generating material 4 heats up slower than the second aerosol generating material 5 when exposed to the same heating and will release its volatile compounds (e.g. nicotine) at a slower rate than the second aerosol-generating material 5 (however, in other embodiments the reverse may be true such that the second aerosol generating material 5 has a higher density than the first aerosol generating material 4). Thus, combining aerosol-generating materials with different densities provides a more consistent and longer-lasting release of volatile compound(s). In some embodiments, the aerosol-generating materials of different densities are combined with separate heating of these materials at optionally different times and/or different temperatures, thereby allowing the provision of a more tailored release of the volatile compound(s) over the period of consumption of the article, for example. Alternatively, it may be desirable to have a more rapid or greater release of volatiles towards the beginning of the consumption of the article, to provide the user with a greater initial impact from use. The capacity to control the aerosol generation and volatile compound release may be particularly advantageous because the article can be made relatively small whilst still achieving a particular desired release of volatile compound(s) over the period of consumption.

In some embodiments, one of the first and second aerosol generating materials 4, 5 has a density that is at least about 25% higher than the density of the other one of the first and second aerosol generating materials 4, 5 and, optionally, at least about 30%, 35%, 40%, 45%, 50%, 55%, 60%, 65%, 70% or 75% higher. The said one of the first and second aerosol generating materials 4, 5 may have a density that is no more than about 200% higher than the density of the other one of the first and second aerosol generating materials 4, 5 and, optionally, no more than about 150%, 125%, 100% or 75% higher. In some embodiments, the one of the first and second aerosol generating materials 4, 5 has a density that is from about 25% to about 75% higher than the density of the other one of the first and second aerosol generating materials 4, 5.

In some embodiments, said one of the first and second aerosol generating materials 4, 5 has a density of from at least about 0.4 g/cm³ and optionally from at least about 0.5, 0.6, 0.7, 0.8, 0.9, 1, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9 or 2 g/cm³. The said one of the first and second aerosol generating materials 4, 5 may have a density of no more than about 2 g/cm³ and, optionally no more than about 1.9, 1.8, 1.7, 1.6, 1.5, 1.4, 1.3, 1.2, 1.1, 1, 0.9, 0.8, 0.7, 0.6 or 0.5 g/cm³. In some embodiments, the density of said one of the first and second aerosol generating materials 4, 5 is from about 0.4 to 1.99 g/cm³.

In some embodiments, the said other one of the first and second aerosol generating materials 4, 5 has a density of from at least about 0.1 g/cm³ and optionally from at least about 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8 or 0.9 g/cm³. The said other one of the first and second aerosol generating materials 4, 5 may have a density of no more than about 1 g/cm³ and, optionally no more than about 0.9, 0.8, 0.7, 0.6, 0.5, 0.4, 0.3 or 0.2 g/cm³. In some embodiments, the density of the said other one of the first and second aerosol-generating materials 4, 5 is from about 0.1 to 0.9 g/cm³.

In some embodiments, the first and second aerosol-generating materials 4, 5 comprise the same components. Upon heating, they will therefore release very similar aerosols, potentially having the same content of active substance and/or flavour, etc. Their different densities allow the aerosol to be generated from the two materials at different speeds and/or different times during heating.

In other embodiments, the first and second aerosol-generating materials 4, 5 comprise different components (and may have the same or different densities). Upon heating, they will therefore release different aerosols, potentially having different make-up of active substance and/or flavour, etc. Their different densities allow the different aerosols to be generated from the two materials at different speeds and/or different times during heating, potentially providing an aerosol that changes over the period of use.

In some embodiments, the first aerosol-generating material 4 and the second aerosol-generating material 5 each comprise a botanical material, for example, tobacco. The tobacco will contain volatile components including nicotine, aromas and flavours. The tobacco may be any type of tobacco and any part of the tobacco plant, including tobacco leaf, lamina, stem, stalk, ribs, scraps and shorts or mixtures of two or more thereof. Suitable tobacco materials include the following types: Virginia or flue-cured tobacco,

Burley tobacco, Oriental tobacco, or blends of tobacco materials, optionally including those listed here. The tobacco may be expanded, such as dry-ice expanded tobacco (DIET), or processed by any other means. In some embodiments, the tobacco material may be reconstituted tobacco material. The tobacco may be pre-processed or
5 unprocessed, and may be, for instance, solid stems (SS); shredded dried stems (SDS); steam treated stems (STS); or any combination thereof. The tobacco material may be fermented, cured, uncured, toasted, or otherwise pre-treated.

The first and second aerosol-generating materials 4, 5 may comprise different tobacco.
10 Alternatively, the tobacco may be the same, but is provided in a different form, so that one of the first and second aerosol-generating materials 4, 5 has a greater density than the other one of the first and second aerosol-generating materials 4, 5.

In some embodiments, the first aerosol-generating material 4 has at least one (further)
15 different characteristic to the second aerosol generating material 5. The different characteristic may be one or more of form, size, , water content, amount (by weight), material or materials, or proportion of materials that make the first and second aerosol-generating materials 4, 5 (including the recipe of the aerosol generating materials when each is manufactured from more than one material). In some embodiments, the first
20 and second aerosol-generating materials 4, 5 do not have a different characteristic, other than their different densities. In other embodiments, the densities of the first and second aerosol generating materials is the same.

In some embodiments, the second aerosol-generating material 5 comprises one or more
25 tobacco in the form of cut rag. This tobacco material may lamina or reconstituted tobacco material. In some embodiments, the second aerosol-generating material 5 is a blend comprising both lamina and reconstituted tobacco. For example, the ratio of lamina and reconstituted tobacco may from about 1:4 to about 4:1.

In some embodiments, the first aerosol-generating material 4 has a greater density
30 than the second aerosol-generating material 5. In some embodiments, this more dense, first aerosol-generating material 4 comprises particles or may be in the form of beads or one or more sheets. Each bead or sheet may be formed from smaller particles that have been agglomerated. However, it should be recognised that in other embodiments,
35 the second aerosol-generating material 5 may be denser than the first aerosol generating material 4 and, for example, may be in the form of beads or one or more

5 sheets. In some embodiments, the both of the first and second aerosol generating materials 4, 5 may be in the form of beads or one or more sheets and, optionally, may be processed such that one of the first and second aerosol generating materials 4, 5 has a higher density than the other one of the first and second aerosol generating materials 4, 5. In some embodiments, the beads 4, 5 may be cast in a sheet material.

10 As used herein, the term “beads” is meant to include beads, pellets, or other discrete small units that have been shaped, moulded, compressed or otherwise fashioned into a desired shape. The beads may have smooth, regular outer shapes (e.g., spheres, cylinders, ovoids, etc.) and/or they may have irregular outer shapes.

In some embodiments, the beads have a diameter (for example, as measured by sieving) of at least about 0.5 mm and, optionally at least about 1, 1.5, 2, 2.5 or 3 mm. The beads may have a diameter (for example, as measured by sieving) of no more than
15 about 5 mm and, optionally no more than about 4.5, 4, 3.5, 3, 2.5, 2 or 1.5 mm. In some embodiments, the diameter of each bead may range from about 0.5 mm to about 3 mm, or from about 1 mm to about 2 mm. The size of the beads may refer to their average size, such as the number or volume mean size.

20 In some embodiments, the desired density of the aerosol-generating material 4, 5 is achieved or controlled through the formulation of the material and/or the method(s) by which the material is processed. Processes involving agglomeration, and especially agglomeration with the application of some of compressive forces will tend to increase the density of the material.

25 Thus, in some embodiments, the first and/or second aerosol-generating material 4, 5 comprises particles of material that are agglomerated.

30 In the case of a sheet material, the sheet may be formed from particles of material that are bound and optionally compressed to form a sheet with the desired dimensions and density.

In some embodiments, beads or pellets can be formed using a so called marumarising process.

35

In some embodiments, the agglomeration is by pelletisation. Pelletisation is an agglomeration process that converts fine particles of material, optionally together with excipient, into free-flowing units, referred to as pellets. Depending on the type of equipment and processes selected, pellet formation and growth may occur in a number of ways. These pellets may be formed by agitation and as the particles are rolled and tumbled in the presence of appropriate quantities of a liquid, agglomerates are formed. Balling may involve the use of apparatus such as pans, discs, drums or mixers to produce pellets. Compaction pelletisation is a form of pressure agglomeration, in which the particles are forced together by a mechanical force, optionally with formulation aids. The compressive forces mean that the pellets formed have increased density compared to the starting material.

In some embodiments, the agglomeration is by extrusion. In some embodiments, pellets formed by pelletisation may be extruded to form higher density extrudates.

The particles to be extruded may have a size selected to produce a more dense aerosol-generating material (e.g. a more dense first or second aerosol generating material 4, 5), which will have an impact on the heat transfer within the material and the release of the volatile components.

Extrusion involves feeding a composition (also referred to as a precursor composition) through a die to produce an extruded product. The process applies pressure to the composition combined with shear forces.

Extrusion may be performed using one of the main classes of extruders: screw, sieve and basket, roll, ram and pin barrel extruders. A single screw or twin screw extruder may be used. Forming the tobacco beads by extrusion has the advantage that this processing combines compression, mixing, conditioning, homogenizing and moulding of the composition.

In some embodiments, during extrusion the free-flowing composition comprising particles, such as tobacco particles, is exposed to elevated pressure and temperature and is forced through an orifice, such as a shaping nozzle or die, to form an extrudate. In some embodiments, the extrudate has a rod-like form and it may be cut into segments of a desired length.

In some embodiments, the composition is exposed to temperatures from about 40°C to about 150°C, or from about 80°C to about 130°C, or from about 60°C to about 95°C within the extruder. In some embodiments, including those using double extrusion, the precursor composition is exposed to temperatures from about 70°C to about 95°C within the extruder. In some embodiments, including those using single extrusion, the precursor composition is exposed to temperatures from about 60°C to about 80°C within the extruder.

The composition may be exposed to pressures (immediately before the die or nozzle) ranging from about 2 bar to about 100 bar, or from about 5 bar to about 60 bar, depending on the design of the die or nozzle being used. The higher the pressure, the greater the density of the extrudate is likely to be. Thus, the extrusion process may be adjusted to provide extruded aerosol-generating material with the desired density.

In some embodiments where tobacco particles are extruded, due to the relatively high density of the extrudate and the relatively open surface of the tobacco particles within it, the tobacco beads formed from the extrudate exhibit good heat transfer and mass transfer, which has a positive impact on the release of tobacco constituents, such as flavours and nicotine.

In some embodiments, the extrusion may be a generally dry process, with the composition including aerosol generating particles that are dry or substantially dry. The composition may optionally include other particulate materials including, for example, base, diluent, solid aerosol forming agents, solid flavour modifiers, etc.

In some embodiments, liquids may be added to the composition prior to or during the extrusion process. For example, water may be added, for example as a processing aid to assist dissolution or solubilisation of components of the composition, or to aid binding or agglomeration. Alternatively or additionally, a wetting agent may be added to the composition.

In some embodiments, the liquid may be an aerosol former material such as glycerol or others discussed herein. When liquid is added to the composition in this manner, the liquid is applied not only on the surface, but, as a result of the extruder pressure combined with the intensive mixing by high shear forces, the extrudate becomes impregnated with the liquid. Where the liquid is an aerosol former material, this can

result in a high availability of the aerosol former material in the resultant beads to enhance evaporation of volatile components.

5 In some embodiments, the amount of aerosol former material incorporated into the extruded beads may be up to about 30% by weight and even up to about 40% by weight. Ordinarily, such high amounts of aerosol former material could render the composition difficult to handle. However, this is less of an issue where extrusion results in the particles being impregnated with the aerosol former material. It may be desirable to include an aerosol former material in an amount such as at least about 10% or at least
10 about 20% by weight where the beads are to generate an aerosol in addition to releasing the volatile components. Smaller amounts of aerosol former material, such as up to about 5% by weight, may be sufficient where the beads' primary function is to release volatile constituents carried by the beads into an existing aerosol or air flow.

15 In some embodiments, the agglomerates do not include a binder or binding additive. For example, extruded beads may not require a binder to maintain their structural integrity. In other embodiments, the agglomerates comprise a binder or binding additive. The binding additive may be selected to assist in the formation of an agglomerated structure by helping to adhere the particles to each other and to other
20 components in the composition. Suitable binding additives include, for example, thermoreversible gelling agents such as gelatin, starches, polysaccharides, pectins, alginates, wood pulp, celluloses, and cellulose derivatives such as carboxymethylcellulose.

25 In some embodiments, processing by extrusion is sufficient to provide the higher density of the first or second aerosol-generating material 4, 5, where desired. However, in other embodiments, the extrudate may be further treated to increase the density of the first or second aerosol-generating material 4, 5.

30 For example, in some embodiments, the extruded aerosol-generating material undergoes spheronisation. In spheronisation, the extruded, cylindrically shaped particles are broken into uniform lengths and are gradually transformed into spherical shapes due to plastic deformation. Where the extrudate is first broken into uniform lengths, spheres with a uniform diameter will be produced by the spheronisation step.

35

According to one specific example of the embodiments discussed herein, samples of the first aerosol-generating material 4 were produced as follows (but note that in some embodiments samples may be produced according to the below, which are instead used for the second aerosol generating material⁵ and/or a third aerosol generating material).

5

Three sample formulations with and without binders are shown in Table 1, with the amounts indicated as percent wet weight basis (WWB).

Table 1

	Formulation 1 (with binders)	Formulation 2 (without binders)	Formulation 3 (without binders)
Tobacco	29%	75%	75%
Calcium Carbonate	29%	-	-
Water	26%	4%	9%
Glycerol	14%	20%	15%
CMC	1%	-	-
Flavour	-	1%	1%

10

The tobacco was ground to produce a fine powder, taking care not to overheat the tobacco. The ground tobacco particles were sieved to select those with a desired size, for example a particle size of less than 250 µm, of less than 100 µm or less than 60 µm.

15 Next, all of the dry (non-liquid) components of the formulation were combined and mixed or blended in a mixer. In this particular instance, the mixture was mixed for 1 minute at a speed to 75 RPM. This was to ensure that the dry components are homogenously distributed within the mixture.

20 Next, half of the glycerol and half of the water were added to the dry mixture and mixed. Specifically, the mixture was mixed for a further minute at 75 RPM. The remaining glycerol and water was then added and mixed, again for 1 minute at 75 RPM. Then, to ensure that a homogenous mixture was achieved, mixing was continued until the mixture had a crumbly consistency that could be squeezed into a mass. In this
25 specific instance, the additional mixing lasted 3 minutes.

The mixture was then extruded using a Caleva Multilab. The extruder was operated at approximately 1500 rpm to produce lengths of extrudate resembling spaghetti.

The extrudate was broken into pieces of varying length as it came out of the extruder.

5 These pieces were then spheronised. Spheronisation was carried out until spherical beads were formed. In this instance, the extrudate was initially spheronised in a Caleva Multilab operating at 2,500 RPM for 1 minute and then the beads were checked for any defects. Then, spheronisation continued for a further 1 to 2 minutes. This
10 spheronisation step broke the extruded tobacco into the individual pieces and formed the dense, spherical beads.

In a final step, the spheronised beads were dried in an oven at 65°C for 30 minute periods. After each drying period, the beads were weighed and drying was halted when
15 the desired moisture weight loss was achieved. Generally, such drying will take about 1 hour.

In some embodiments, the other one of the first and/or second aerosol-generating material 4, 5 is in the form of discrete particles, or in the form of an agglomerated body of particles. These particles may share various characteristics with the (denser) one of
20 the first and second aerosol-generating material 4, 5, such as particle size, but will have a lower density. As described above, there are various ways to adjust the density of the aerosol-generating material 4, 5, such as the formulation and/or the processing of the material into particles, beads or pellets.

25 In some embodiments, said other one of the first and second aerosol-generating materials 4, 5 comprises a combination of 60% reconstituted tobacco and 40% lamina tobacco, with the density of this material being in the range of from about 0.1 to about 0.9 g/cm³. The other (denser) aerosol-generating materials 4, 5 comprises from about 30 to about 90% tobacco, with a density in the range of from about 0.4 to about 1.99
30 g/cm³. The amount of aerosol forming material included in the first and/or second aerosol-generating materials 4, 5 may be from about 8 to about 15%. The (denser) one of the first and second aerosol-generating materials 4, 5 may comprise largely spherical beads with a particle size between about 0.5 and about 3 mm. In some embodiments, the aerosol generating material in an article comprises approximately 50% of the first
35 aerosol-generating material 4 and about 50% of the second aerosol-generating material 5, by weight. Thus, for example, an article comprising 260 mg of aerosol-generating

material may comprise 130 mg of the first aerosol-generating material 4 and 130 mg of the second aerosol-generating material 5.

5 In some embodiments where the aerosol-generating material comprises tobacco, the tobacco is present in an amount of between about 10% and about 90% by weight of the aerosol generating material.

10 In some embodiments, the tobacco may be present in an amount of at least about 10%, 11%, 12%, 13%, 14%, 15%, 16%, 17%, 18%, 19%, 20%, 21%, 22%, 23%, 24%, 25%, 26%, 27%, 28%, 29%, 30%, 31%, 32%, 33%, 34%, or at last about 35% tobacco based on the weight of the aerosol generating material.

15 In some embodiments, the tobacco may be present in an amount of no more than about 90%, 89%, 88%, 87%, 86%, 85%, 84%, 83%, 82%, 81%, 80%, 75%, 70%, 65%, 60%, 55%, 50%, 45%, or no more than about 40% tobacco based on the weight of the aerosol generating material.

20 The tobacco described herein may contain nicotine. In some embodiments, the nicotine content is from 0.5 to 2% by weight of the tobacco, and may be, for example, from 0.5 to 1.75% by weight of the tobacco, from 0.8 to 1.2% by weight of the tobacco or from about 0.8 to about 1.75% by weight of the tobacco. In some embodiments, the nicotine content may be from 0.8 to 1% by weight of the tobacco.

25 In some embodiments, the first and second aerosol-generating materials 4, 5 have the same nicotine content.

In some embodiments, the first and second aerosol-generating materials 4, 5 comprise one or more volatile components. In some embodiments, the first and second aerosol-generating materials 4, 5 have the same volatile component content.

30

In some embodiments, the first and/or second aerosol-generating materials 4, 5 comprise tobacco. For example, the first and/or second aerosol-generating materials 4, 5 may comprise from about 80 to about 350 mg of tobacco. In some specific embodiments, the aerosol-generating material in an article or consumable has a weight of 260 mg, comprising a combination of 130 mg of a second aerosol-generating material 5, for example comprising a blend of lamina and reconstituted tobacco, and

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130 mg of a first aerosol-generating material 4, for example comprising higher density tobacco beads.

5 In some embodiments, the article comprises regions of aerosol-generating material, wherein each region comprises aerosol-generating material contain an equal amount of tobacco. In alternative embodiments, the regions may contain different amounts of tobacco. Where the total amount of tobacco is from about 80 to about 350 mg, one region of aerosol-generating material comprises from about 20 to about 330 mg, or
10 from about 50 to about 300 mg, or from about 40 to about 125 mg of tobacco and the other region of aerosol-generating material comprises from about 20 to about 330 mg, or from about 30 to about 300 mg or from about 40 to about 125 mg of tobacco.

According to the present disclosure, there is also provided a kit of parts comprising a article 1 according to any of the examples described herein and an aerosol provision
15 device 200.

According to the present disclosure, there is also provided a package (not shown) comprising a plurality of articles according to any of the examples described herein. In some embodiments, the package is hermetically sealed. The package may comprise a
20 container comprising a body and a lid, wherein a space is provided within the container body to receive the plurality of articles. The lid may, for example, be a hinged lid, a snap-fit lid or lid that is connected by a screw thread.

The various embodiments described herein are presented only to assist in
25 understanding and teaching the claimed features. These embodiments are provided as a representative sample of embodiments only, and are not exhaustive and/or exclusive. It is to be understood that advantages, embodiments, examples, functions, features, structures, and/or other aspects described herein are not to be considered limitations on the scope of the invention as defined by the claims or limitations on equivalents to the claims, and that other embodiments may be utilised and modifications may be
30 made without departing from the scope of the claimed invention. Various embodiments of the invention may suitably comprise, consist of, or consist essentially of, appropriate combinations of the disclosed elements, components, features, parts, steps, means, etc, other than those specifically described herein. In addition, this disclosure may include
35 other inventions not presently claimed, but which may be claimed in future.

Claims

1. A method of manufacturing an article for use in an aerosol provision system, the method comprising:
5 providing a first sheet material;
providing a substrate comprising a first aerosol generating material, wherein the substrate is attached to the first sheet material; and,
arranging the first sheet material with the substrate attached thereto such that the first sheet material surrounds the substrate.
10
2. A method according to claim 1, wherein the first sheet material comprises paper or card.
3. A method according to claim 1 or claim 2, wherein the first sheet material
15 comprises a metal.
4. A method according to any one of the preceding claims, wherein the first sheet material comprises a co-laminated material comprising a paper layer and an aluminium layer.
20
5. A method according to claim 4, wherein attaching the substrate to the first sheet material comprises attaching the substrate to the aluminium layer.
6. A method according to any preceding claim further comprising cutting
25 ventilation apertures into the substrate and/or first sheet of material.
7. A method according to any one of claims 1 to 6, wherein the substrate comprises a second sheet material and, preferably, providing the substrate comprises attaching the second sheet material to the first sheet material.
30
8. A method according to claim 7, wherein the second sheet material is a cast sheet.
9. A method according to claim 7 or claim 8, wherein the second sheet material
35 comprises the first aerosol generating material.

10. A method according to claim 9, wherein the second sheet material is formed from a slurry that comprises the first aerosol generating material and, preferably, wherein the slurry is cast to form the second sheet material.
- 5 11. A method according to claim 7, wherein the first aerosol generating material is attached to a surface of the second sheet material and, preferably, is adhered to the surface of the second sheet material.
- 10 12. A method according to claim 11, wherein the first aerosol generating material is attached to the surface of the second sheet material before or after attaching the second sheet material to the first sheet material.
13. A method according to any one of claims 7 to 12, wherein the second sheet material comprises one or more of: paper, card and/or aerosol generating material.
- 15 14. A method according to any one of the preceding claims, wherein providing the first sheet material comprises providing a web of first sheet material.
- 20 15. A method according to claim 14, wherein providing the substrate comprises applying the substrate to the web of first sheet material.
- 25 16. A method according to claim 15, when dependent on any one of claims 2 to 8, wherein applying the substrate to the web of first sheet material comprising applying a web of the second sheet material to the web of first sheet material.
- 30 17. A method according to claim 15, when dependent on any one of claims 2 to 8, wherein applying the substrate to the web of first sheet material comprising applying a plurality of portions of second sheet material to the web of first sheet material.
- 35 18. A method according to claim 17, wherein the plurality of portions of second sheet material are spaced from each other on the web of first sheet material.
19. A method according to any one of the preceding claims, wherein an edge of the substrate is spaced from an edge of the first sheet material such that a region of the first sheet material is not covered by the substrate and, preferably, the method comprises applying adhesive to said region.

20. A method according to any one of the preceding claims, wherein the first sheet material has a permeability of at most 100 Coresta Units.
- 5 21. A method according to any one of the preceding claims, wherein the first sheet material forms an exterior surface of the article.
22. A method according to any one of the preceding claims, wherein the first aerosol generating material comprises aerosol generating material dust and/or aerosol
10 generating material fibres.
23. A method according to any one of the preceding claims, wherein the first aerosol generating material comprises extruded and/or compressed aerosol generating material.
15
24. A method according to any one of the preceding claims, wherein the first aerosol generating material comprises beads.
25. A method according to any one of the preceding claims, wherein the first aerosol
20 generating material comprises, consists of, or essentially consists of tobacco material.
26. A method according to any one of the preceding claims, wherein the article further comprises a second aerosol generating material.
- 25 27. A method according to claim 26, wherein the second aerosol generating material has a higher or lower density than the first aerosol generating material.
28. A method according to claim 26 or claim 27, wherein the second aerosol generating material comprises, consists of, or essentially consists of tobacco material.
30
29. A method according to any one of claims 26 to 28, wherein the substrate comprises the second aerosol generating material.
30. A method according to any one of the preceding claims, wherein arranging the
35 first sheet material with the substrate attached thereto comprises providing the first sheet material and substrate around at least a portion of a body of material and,

preferably, comprises wrapping the first sheet material with substrate about the body of material.

31. A method according to claim 30, wherein the body of material comprises a third
5 sheet material that is gathered to form the body of material.

32. A method according to claim 31, wherein the third sheet material is crimped
and/or cut into strips.

10 33. A method according to any one of claims 30 to 32, when dependent on any one
of claims 21 to 24, wherein the body of material comprises the second aerosol
generating material.

15 34. An assembly for use in a method of manufacturing an article for use in an
aerosol provision system, the assembly comprising:
a first sheet material; and,
a patch comprising a first aerosol generating material, wherein the patch is
attached to the first sheet material.

20 35. An article for use in an aerosol provision system, the article comprising:
a first sheet material; and,
a patch comprising a first aerosol generating material, wherein the patch is
attached to the first sheet material,
wherein the sheet material and patch are arranged such that the sheet material
25 surrounds the patch.

36. An article according to claim 35, wherein the first sheet material comprises
paper or card.

30 37. An article according to claim 35 or claim 36, wherein the first sheet material
comprises a metal.

38. An article according to any one of claims 35 to 37, wherein the first sheet
material comprises a co-laminated material comprising a paper layer and an
35 aluminium layer.

39. An article according to claim 38, wherein the patch is attached the aluminium layer.
40. An article according to any one of claims 35 to 39, wherein the first sheet
5 material forms an exterior surface of the article.
41. An article according to claim 35 or claim 40, wherein the article further comprises a second aerosol generating material.
- 10 42. An article according to claim 41, wherein the second aerosol generating material has a higher or lower density than the first aerosol generating material.
43. An article according to claim 41 or claim 42, wherein the second aerosol
generating material comprises, consists of, or essentially consists of tobacco material.
15
44. An article according to any one of claims 35 to 43, further comprising a body of material, wherein the first sheet material and patch are disposed around at least a portion of the body of material.
- 20 45. An article according to claim 44, wherein the body of material comprises a third sheet material that is gathered to form the body of material.
46. An article according to claim 45, wherein the third sheet material is crimped and/or cut into strips.
25
47. An article according to any one of claims 44 to 46, when dependent on any one of claims 32 to 34, wherein the body of material comprises the second aerosol generating material.
- 30 48. An arrangement according to claim 34 or an article according to any one of claims 35 to 47, wherein the patch comprises a second sheet material and, preferably, the second sheet material is a cast sheet.
49. An arrangement according to claim 48 or an article according to claim 48,
35 wherein the second sheet material comprises the first aerosol generating material.

50. An arrangement according to claim 48 or claim 49 or an article according to claim 48 or claim 49, wherein the second sheet material is formed from a slurry that comprises the first aerosol generating material and, preferably, the slurry is cast to form the second sheet material.

5

51. An arrangement according to claim 48 or claim 49 or an article according to claim 48 or claim 49, wherein the first aerosol generating material is attached to a surface of the second sheet material and, preferably, is adhered to the surface of the second sheet material.

10

52. An arrangement according to any one of claims 48 to 51 or an article according to any one of claims 48 to 51, wherein the second sheet material comprises one or more of: paper, card and/or aerosol generating material.

15

53. An arrangement according to claim 34 or any one of claims 48 to 52 or an article according to any one of claims 35 to 52, wherein the patch comprises a first end that is spaced from a first end of the first sheet material.

20

54. An arrangement according to claim 53 or an article according to claim 53, wherein the patch comprises a second end, opposite to the first end, wherein the second end is spaced from a second end of the first sheet material.

25

55. An arrangement according to claim 34 or any one of claims 48 to 54 or an article according to any one of claims 35 to 54, wherein an edge of the substrate is spaced from an edge of the first sheet material such that a region of the first sheet material is not covered by the substrate and, preferably, wherein said edges are longitudinal edges of the substrate and first sheet material.

30

56. An arrangement according to claim 34 or any one of claims 48 to 55 or an article according to any one of claims 35 to 55, wherein the first sheet material has a permeability of at most 100 Coresta Units.

35

57. An arrangement according to claim 34 or any one of claims 48 to 56 or an article according to any one of claims 35 to 56, wherein the first aerosol generating material comprises aerosol generating material dust and/or aerosol generating material fibres.

58. An arrangement according to claim 34 or any one of claims 48 to 57 or an article according to any one of claims 35 to 57, wherein the first aerosol generating material comprises extruded and/or compressed aerosol generating material.
- 5 59. An arrangement according to claim 34 or any one of claims 48 to 57 or an article according to any one of claims 35 to 58, wherein the first aerosol generating material comprises beads.
60. An arrangement according to claim 34 or any one of claims 48 to 59 or an article
10 according to any one of claims 35 to 59, wherein the first aerosol generating material comprises, consists of, or essentially consists of tobacco material.
61. An arrangement according to claim 34 or claims 48 to 60 or an article according to any one of claims 35 to 60, wherein the patch comprises the second aerosol
15 generating material.
62. An article manufactured according to the method of any one of claims 1 to 33.
63. A package comprising a plurality of articles according to any one of claims 35 to
20 62 and, preferably, wherein the package is hermetically sealed.
64. A kit of parts comprising the article of any one of claims 35 to 62 and an aerosol provision device.
- 25 65. A kit of parts according to claim 64, wherein the aerosol provision device comprises a heating chamber for receiving the article to heat the first and second aerosol generating materials.

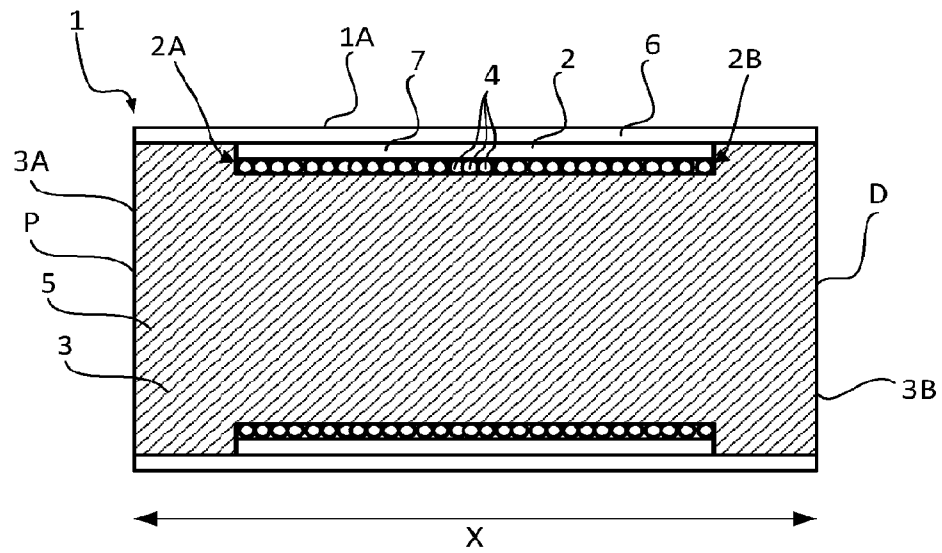


FIG. 1

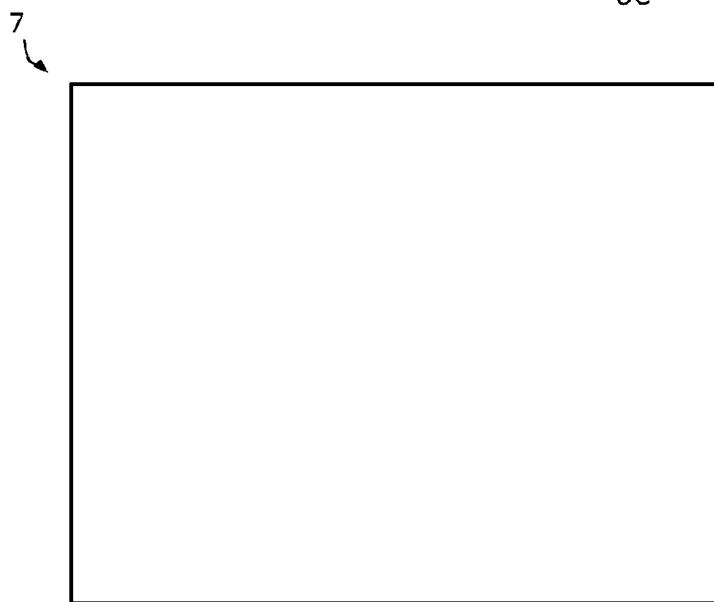
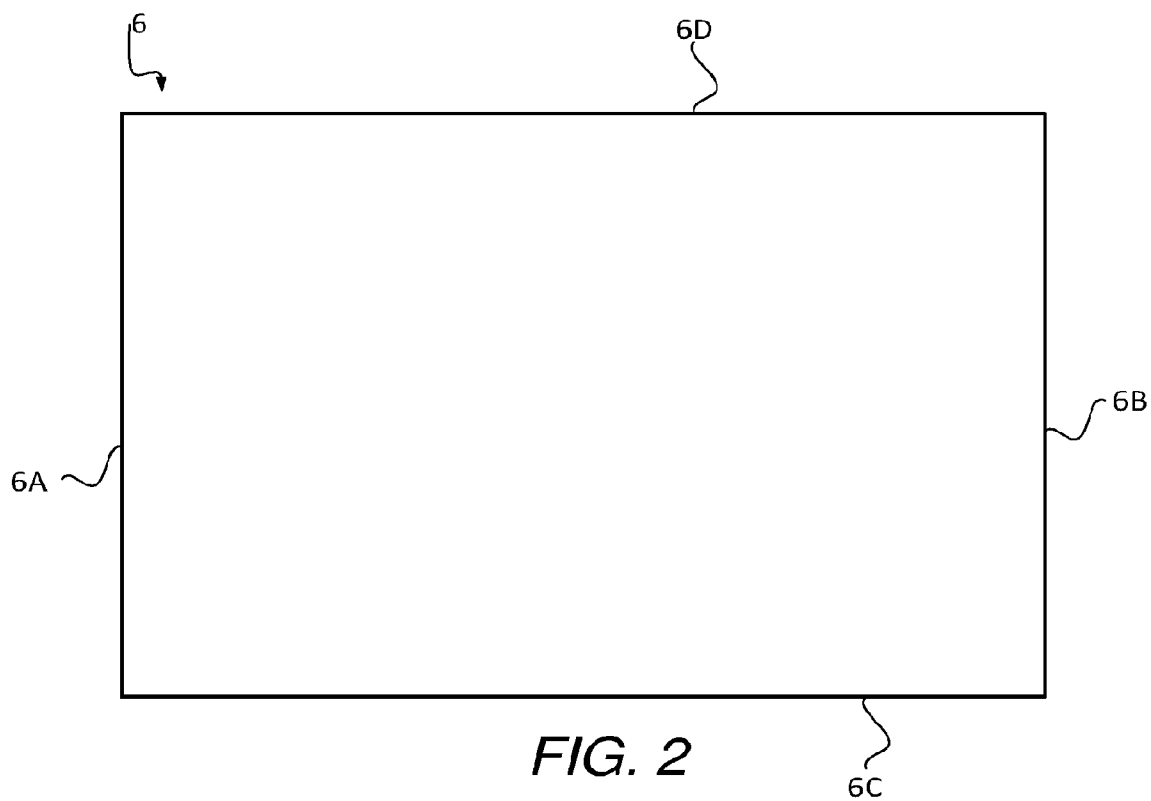
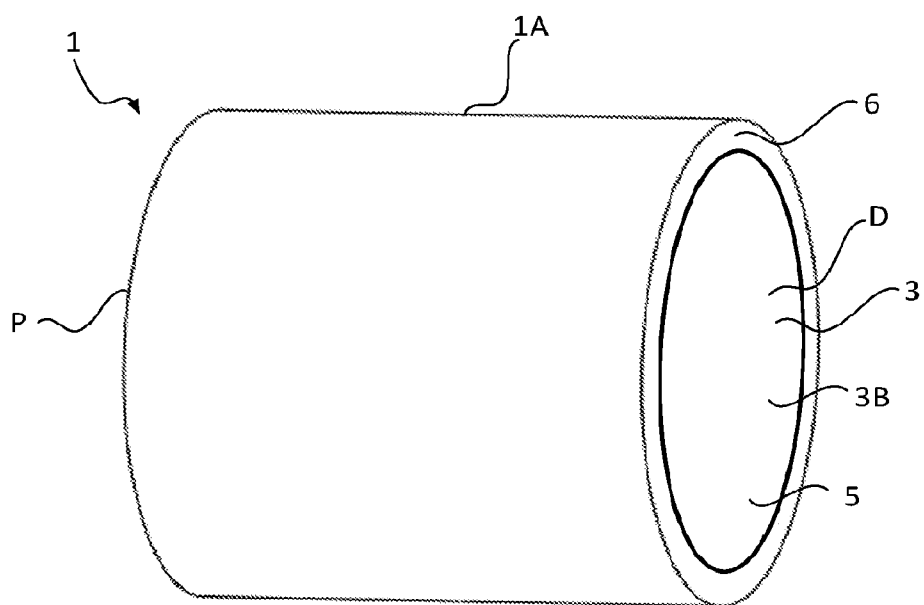
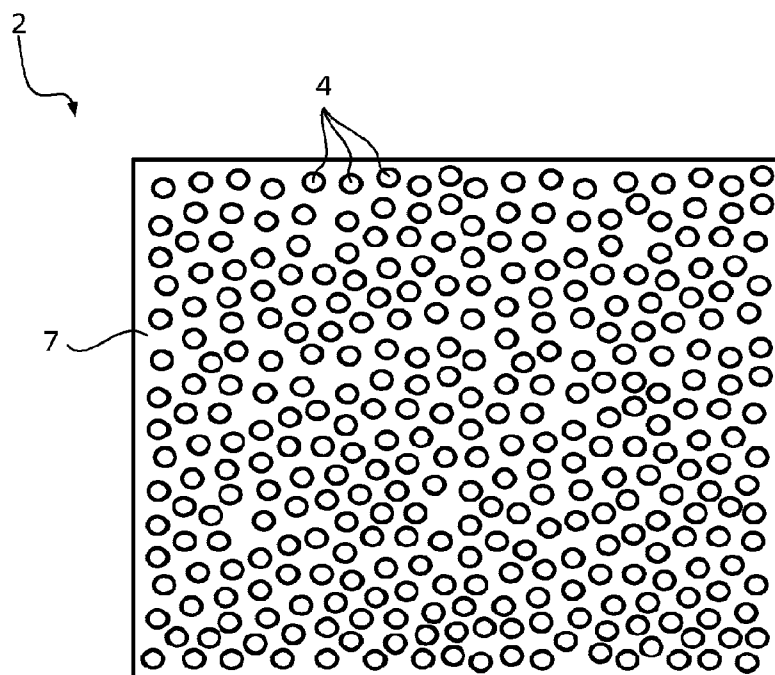
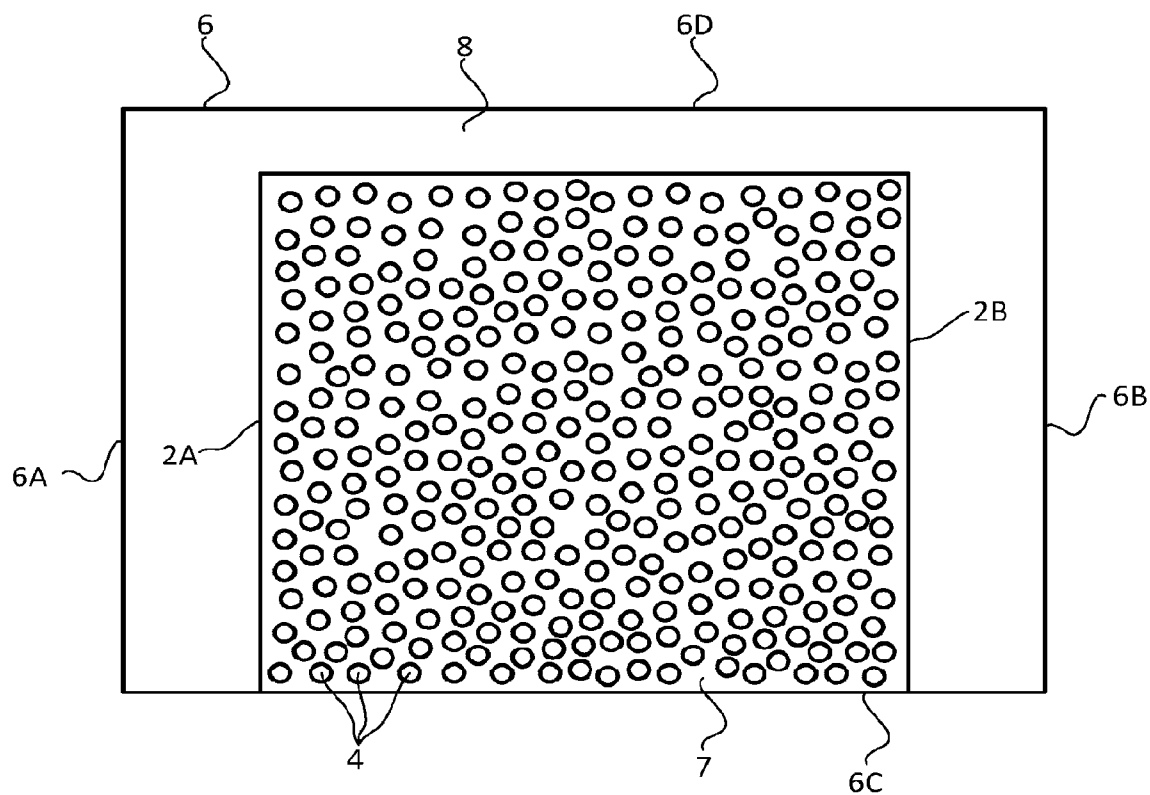
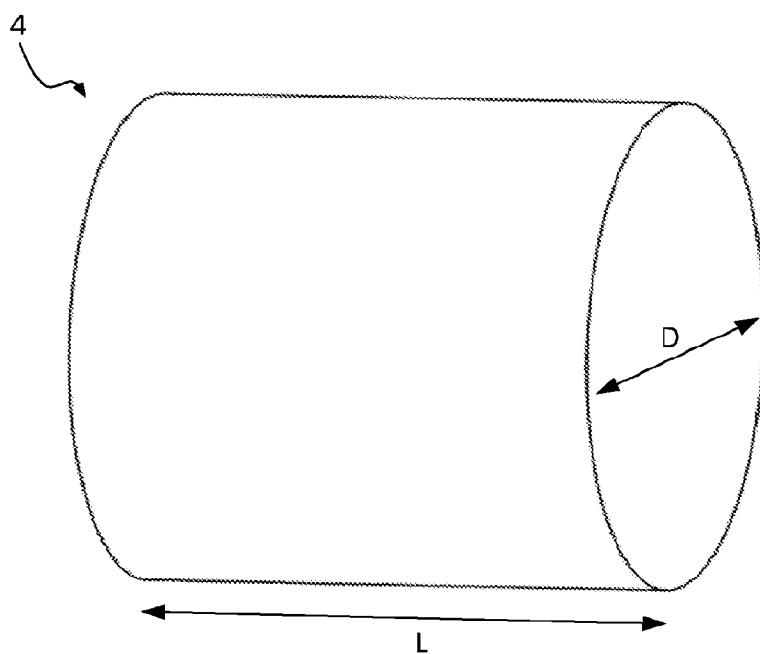


FIG. 3

*FIG. 4*

*FIG. 5*

**FIG. 6**

*FIG. 7*

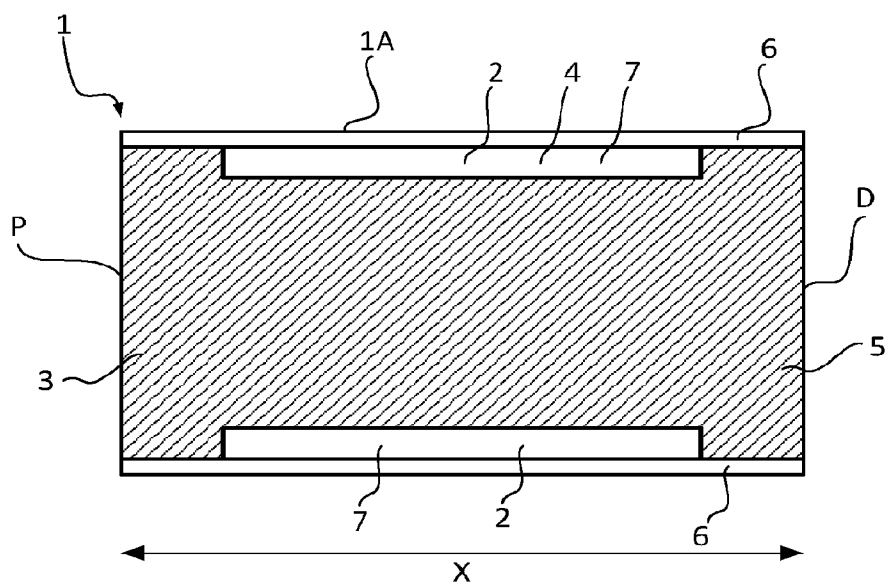


FIG. 8

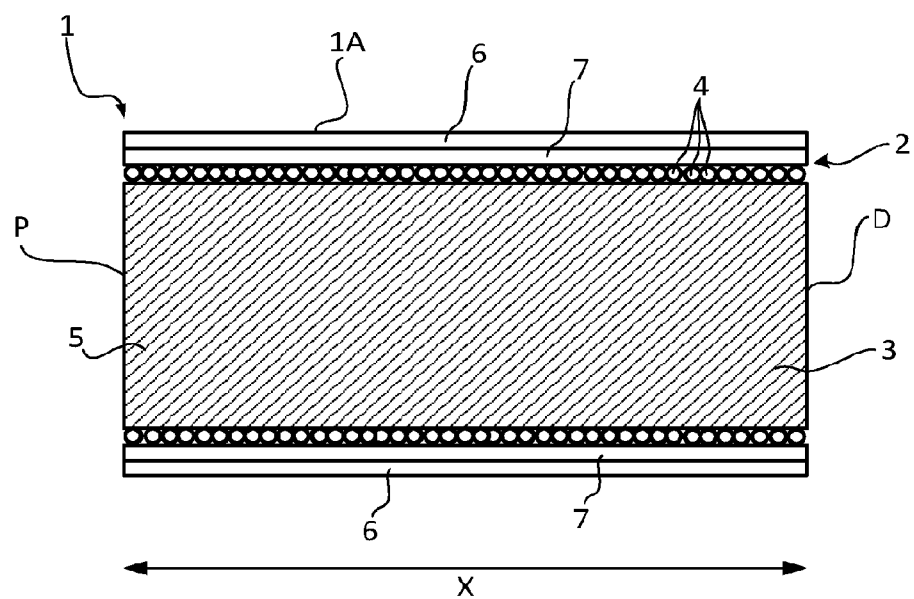
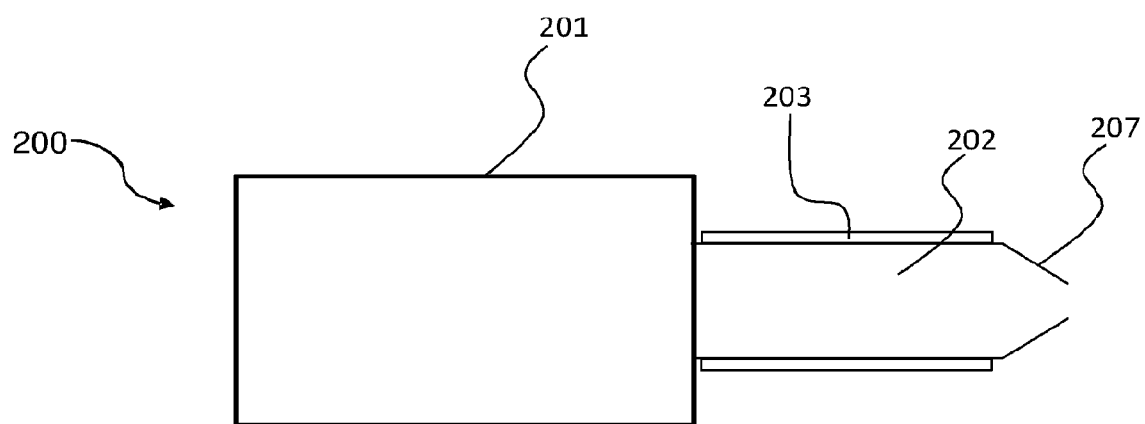
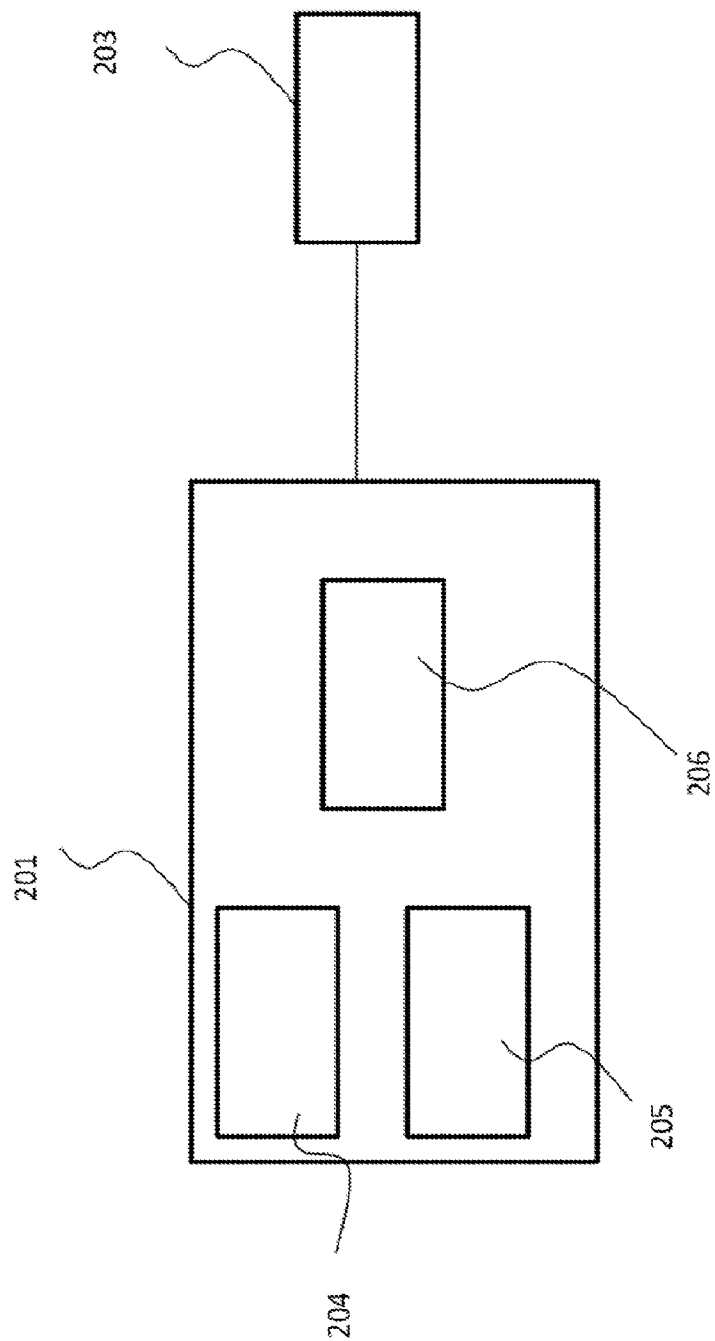


FIG. 9

*FIG. 10*

*FIG. 11*

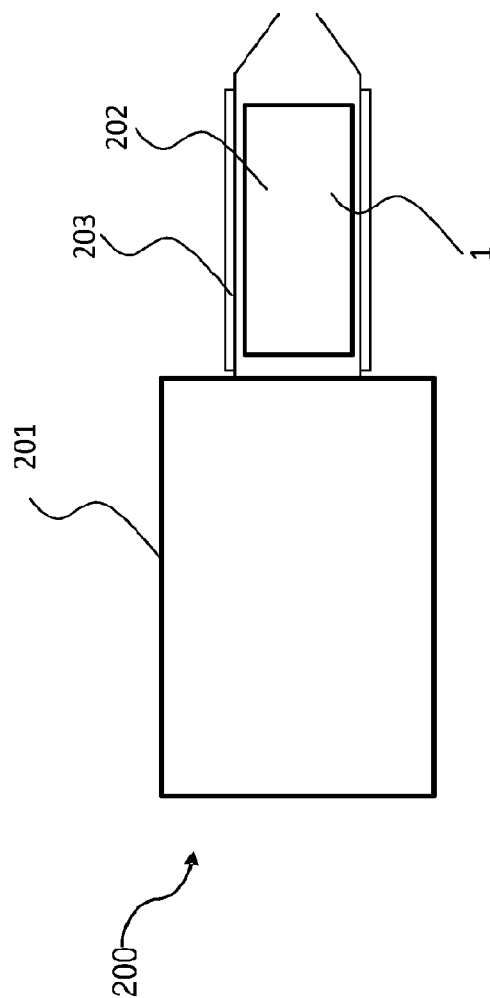
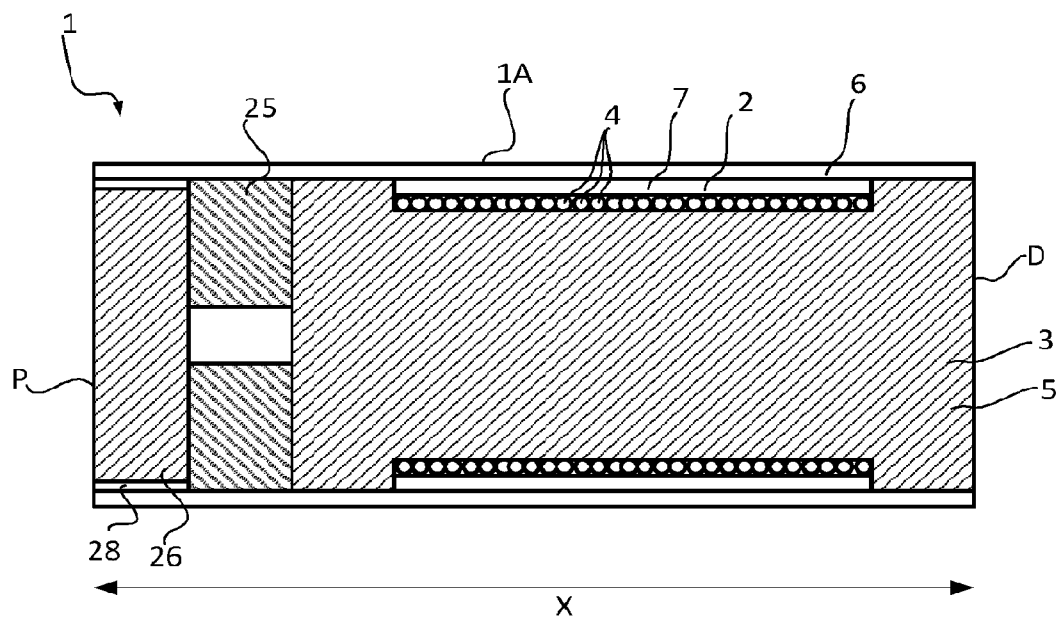
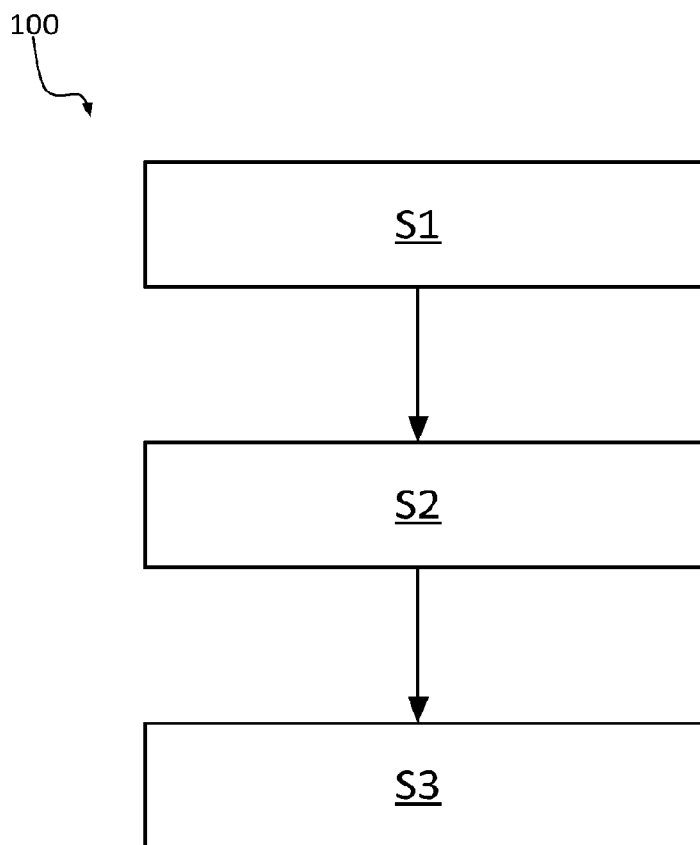
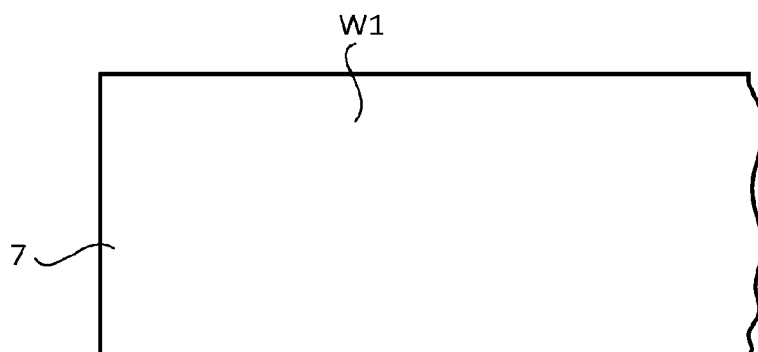
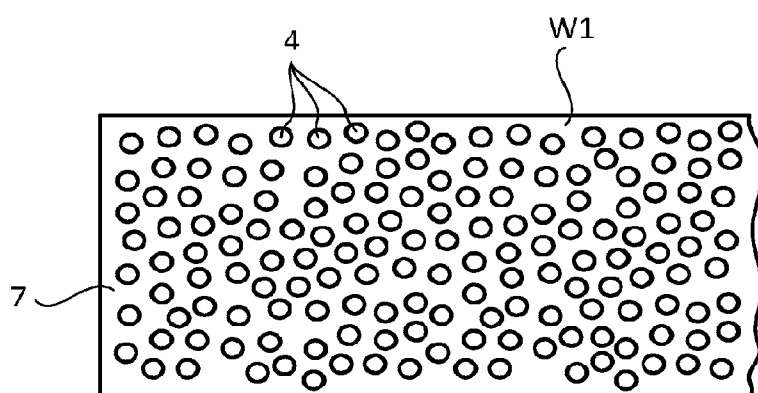
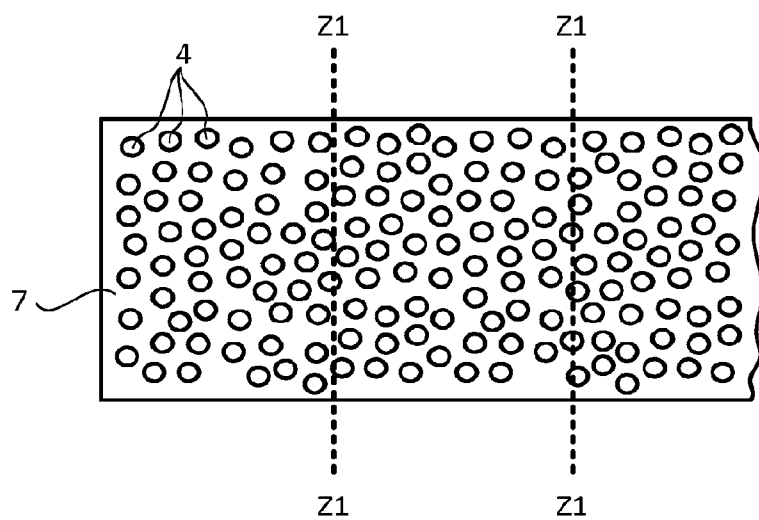
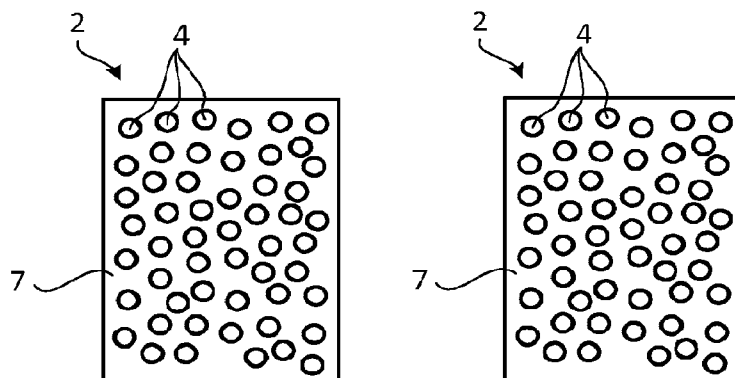


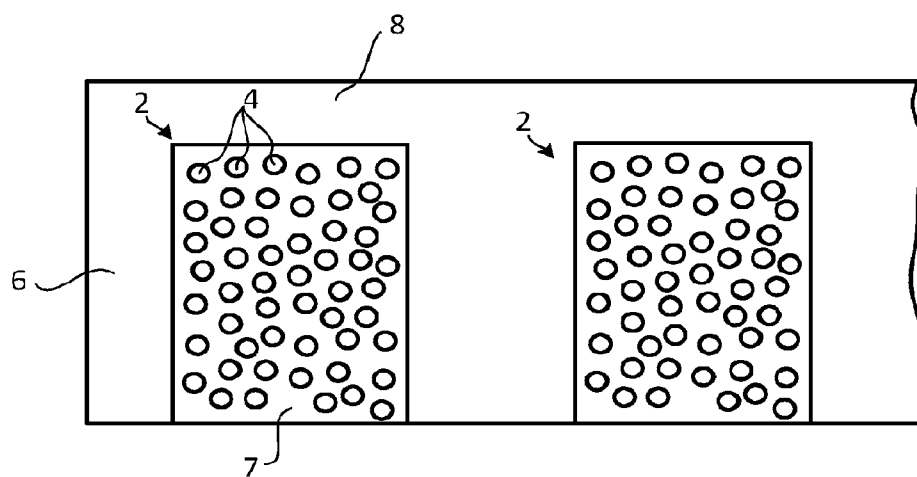
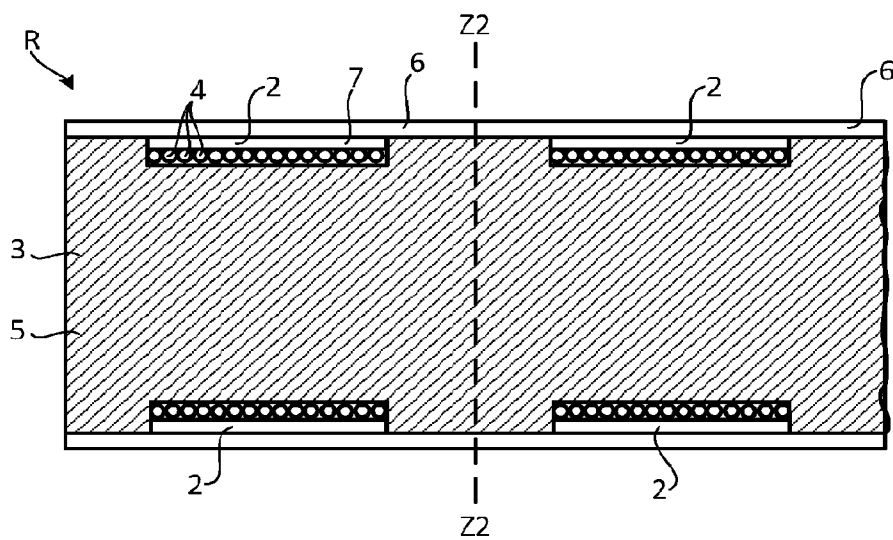
FIG. 12

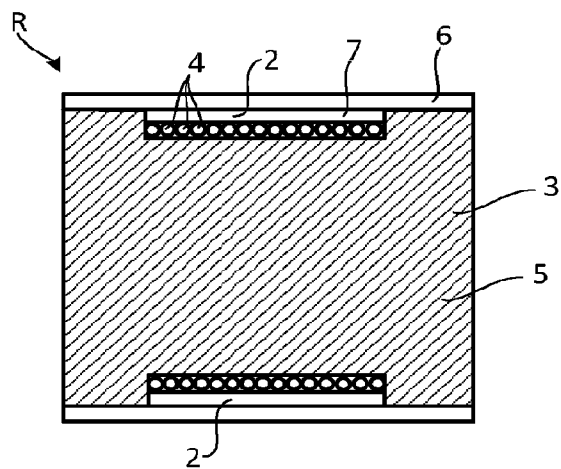
*FIG. 13*

*FIG. 14*

*FIG. 15A**FIG. 15B*

*FIG. 15C**FIG. 15D*

*FIG. 15E**FIG. 15F*

*FIG. 15G*

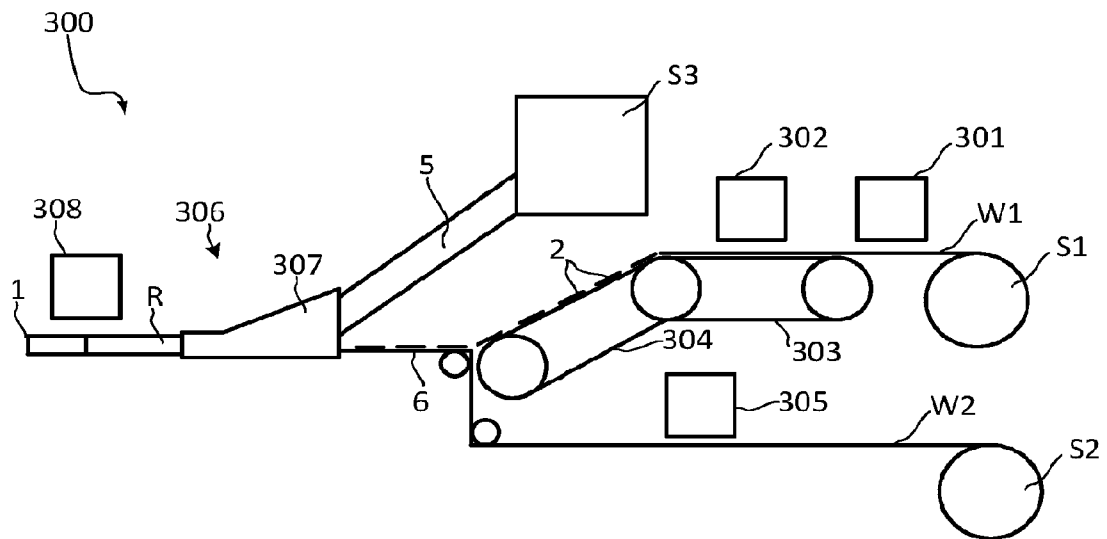


FIG. 16

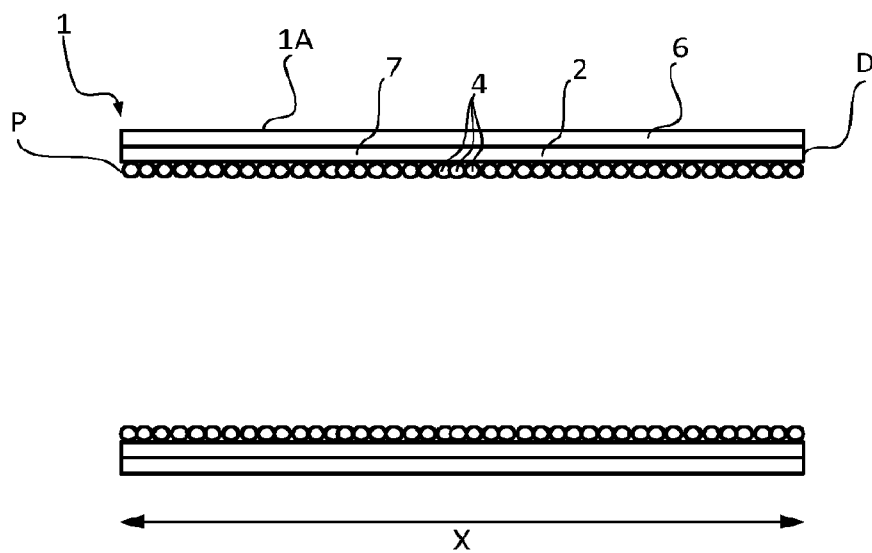
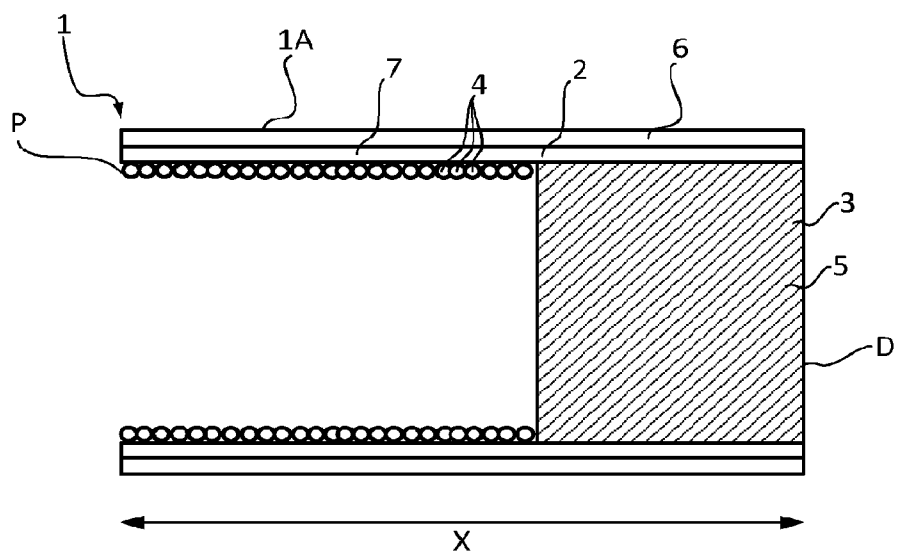


FIG. 17

*FIG. 18*

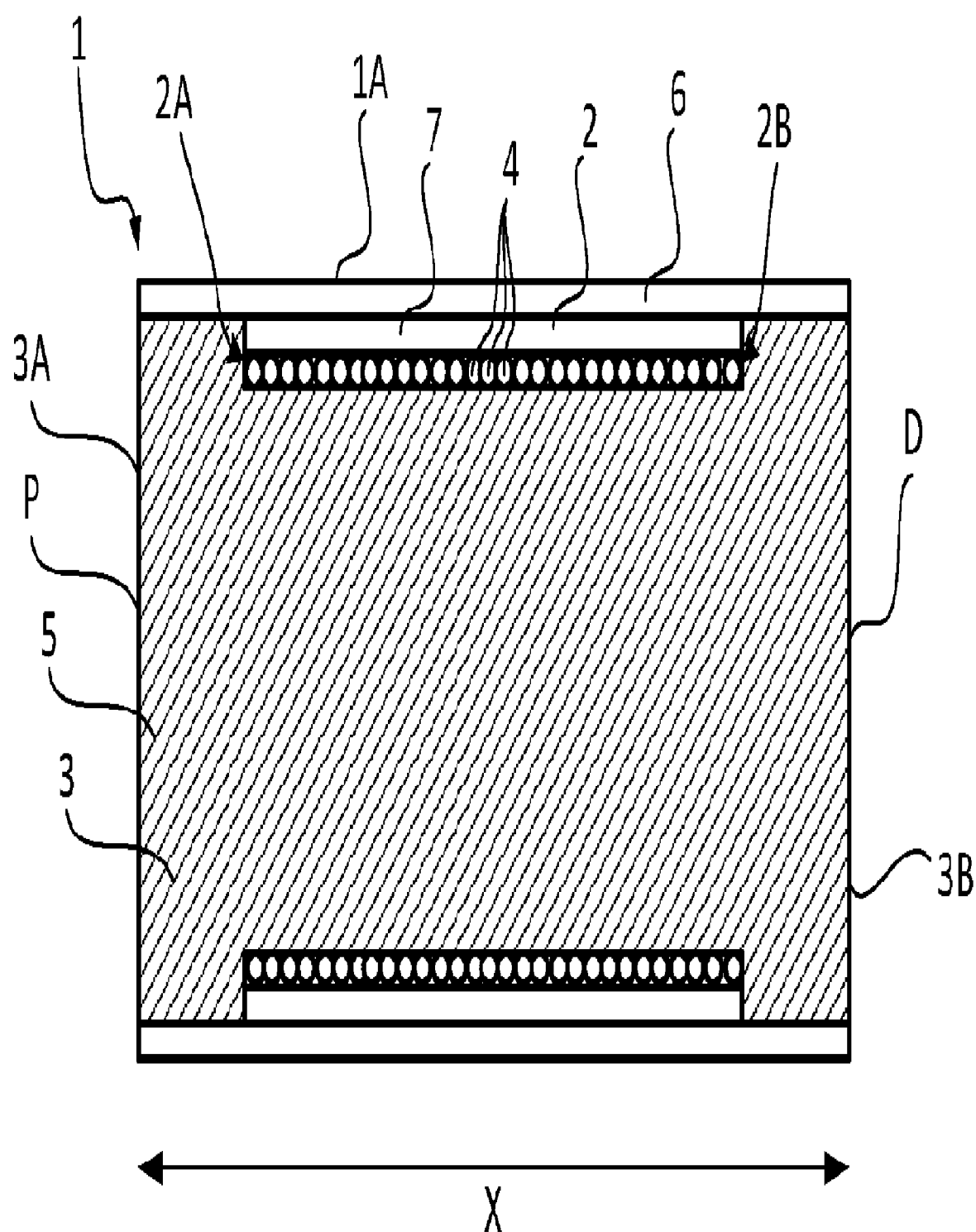


FIG. 1