



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.06.2025 Bulletin 2025/26

(51) International Patent Classification (IPC):
A24D 1/20 ^(2020.01) **A24F 40/465** ^(2020.01)

(21) Application number: **23217664.4**

(52) Cooperative Patent Classification (CPC):
A24D 1/20; A24F 40/465

(22) Date of filing: **18.12.2023**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

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(54) **AEROSOL-GENERATING ARTICLE HAVING AN AIR CHANNELLING ELEMENT**

(57) The present invention relates to an aerosol-generating article (1) comprising an aerosol-generating substrate (12) and an air channelling element (30) located downstream of the aerosol-generating substrate (12). The air channelling element (30) comprises an outer tube (22). The air channelling element (30) comprises an inner body (24) located within the outer tube (22). The air channelling element (30) comprises an inner channel

(26) defined within the inner body (24). The aerosol-generating article (1) further comprises a ventilation zone (15) at a location along the outer tube. The ventilation zone (15) is configured to establish fluid communication between the exterior of the aerosol-generating article (1) and the interior of the outer tube (22). The ventilation zone (15) is located downstream of the upstream end (25a) of the inner body (24).

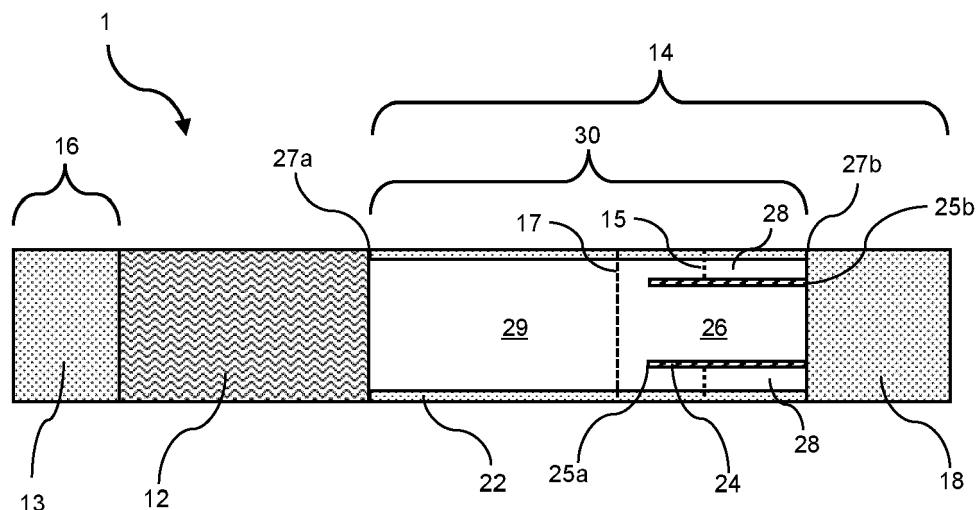


Figure 1

Description

[0001] The present disclosure relates to an air channelling element or cooling element for an aerosol-generating article, preferably to an aerosol-generating article comprising such an air channelling element or cooling element, where the aerosol-generating article is adapted to produce an inhalable aerosol upon heating. The present disclosure also relates to an aerosol-generating system comprising such an aerosol-generating article.

[0002] Aerosol-generating articles in which an aerosol-generating substrate, such as a tobacco-containing material, is heated rather than combusted are known in the art. An aim of such 'heated' aerosol-generating articles is to reduce certain smoke constituents of the type produced by the combustion and pyrolytic degradation of tobacco in conventional cigarettes.

[0003] Typically, in heated aerosol-generating articles an aerosol is generated by the transfer of heat from a heat source to a physically separate aerosol-generating substrate. In use, volatile compounds are released from the aerosol-generating substrate by heat transfer from the heat source to the aerosol-generating substrate and are entrained in air drawn through the aerosol-generating article. As the released compounds cool, they condense to form an aerosol that is inhaled by the user.

[0004] A number of handheld aerosol-generating devices configured to heat aerosol-generating substrates of heated aerosol-generating articles are known in the art. These include electrically-operated aerosol-generating devices in which an aerosol is generated by the transfer of heat from one or more electrical heating elements of the aerosol-generating device to the aerosol-generating substrate of the heated aerosol-generating article. Known handheld electrically operated aerosol-generating devices typically comprise a battery or other power source, control electronics and one or more electrical heating elements for heating the aerosol-generating substrate of a heated aerosol-generating article designed specifically for use with the aerosol-generating device.

[0005] Some known electrically-operated aerosol-generating devices comprise one or more external heating elements. For example, WO 2020/115151 A1 discloses an aerosol-generating system comprising an aerosol-generating article and an electrically-operated aerosol-generating device comprising an external heating element that circumscribes the outer periphery of the aerosol-generating article.

[0006] Aerosol-generating articles in which a tobacco-containing substrate is heated rather than combusted present a number of challenges that were not encountered with conventional smoking articles. Tobacco-containing substrates are typically heated to significantly lower temperatures compared with the temperatures reached by the combustion front in a conventional cigarette. This may have an impact on nicotine release from the tobacco-containing substrate and nicotine delivery to the user. At the same time, if the heating temperature is

increased in an attempt to boost nicotine delivery, then the aerosol generated typically needs to be cooled to a greater extent and more rapidly before it reaches the user.

[0007] Aerosol delivery and user experience may be strongly influenced when an aerosol-generating article of the type described above is used under particularly hot and humid weather conditions, such as those frequently encountered in countries characterised by a tropical climate. For instance, high humidity levels, for example above 90%, may lead to the material of the aerosol-generating substrate having a higher concentration of water. This higher concentration of water together with the humid air being drawn through the article may lead to a hotter aerosol when the substrate is heated. As a result, when the article is heated and drawn on by a user, the temperature at the mouthpiece of the article may be relatively high, which may be associated with a feeling of discomfort for some users, as sensitive tissues such as lips may come into direct contact with a surface of the mouthpiece during use.

[0008] However, technical solutions that were commonly used for cooling the mainstream smoke in conventional smoking articles, such as the provision of a high filtration efficiency filter element at the mouth end of a cigarette, may have undesirable effects in an aerosol-generating article wherein a tobacco-containing substrate is heated rather than combusted, as they may reduce nicotine delivery. Accordingly, it would be desirable to provide novel aerosol-generating articles that can consistently ensure a quick and satisfactory aerosol delivery to the user.

[0009] Thus, it would be desirable to provide a novel and improved element for an aerosol-generating article adapted to optimise cooling of the aerosol being delivered to the user. It would also be desirable to provide a novel and improved element for an aerosol-generating article adapted to optimise cooling of surfaces of the mouth end of the article that may come into contact with sensitive tissues of a user during use. At the same time, it would be desirable to provide one such aerosol-generating article that can be manufactured efficiently and at high speed without requiring major modifications of existing equipment and apparatus.

[0010] Further, it would be desirable to provide an element of an aerosol-generating article that also reduces the risk of material of the aerosol-generating substrate from unduly migrating upstream or downstream from the aerosol-generating substrate or even exiting the aerosol-generating article.

[0011] Further, it would be desirable to provide an aerosol-generating article that can be manufactured efficiently and at high speed, preferably with a satisfactory resistance to draw (RTD) and low RTD variability from one article to another and without the need for extensive modification of existing equipment and processes. It would also be desirable to provide an aerosol-generating article for use with an aerosol-generating device in which

the quality and consistency of aerosol delivered to a user is improved compared to known heated tobacco products.

[0012] The present disclosure relates to an aerosol-generating article that may comprise an aerosol-generating substrate and an air channelling element located downstream of the aerosol-generating substrate. The air channelling element may comprise an outer tube. The air channelling element may comprise an inner body located within the outer tube. The air channelling element may comprise an inner channel defined within the inner body. The aerosol-generating article may further comprise a ventilation zone at a location along the outer tube. The ventilation zone may be configured to establish fluid communication between the exterior of the aerosol-generating article and the interior of the outer tube. The ventilation zone may be located downstream of the upstream end of the inner body. The air channelling element may be referred to in the present disclosure as a cooling element.

[0013] The present invention relates to an aerosol-generating article comprising an aerosol-generating substrate and an air channelling element located downstream of the aerosol-generating substrate. The air channelling element comprises an outer tube. The air channelling element comprises an inner body located within the outer tube. The air channelling element comprises an inner channel defined within the inner body. The aerosol-generating article further comprises a ventilation zone at a location along the outer tube. The ventilation zone is configured to establish fluid communication between the exterior of the aerosol-generating article and the interior of the outer tube. The ventilation zone is located downstream of the upstream end of the inner body. The air channelling element of the aerosol-generating article according to the present invention may also be referred to as a cooling element.

[0014] The provision of an inner channel defined within an inner body that is located within an outer tube of an air channelling element downstream of the aerosol-generating substrate may ensure that hot aerosol travelling downstream from the aerosol-generating substrate can be cooled. The air or aerosol travelling downstream from the aerosol-generating substrate may be segregated by the inner body such that aerosol travelling outside of the inner channel may be cooled by way of heat exchange with the material of the inner body and with external environment via the wall of the air channelling element. It is such peripheral aerosol that will be travelling in proximity to the outer surface of the article, particularly at the mouth end of the article, that will influence the external temperature of the article at the mouth end. This mouth end portion of the article may be in contact with a sensitive body part of a user such as the lips. The airflow segregation enabled by the air channelling element of the present invention may ensure that such peripheral aerosol may be cooled down sufficiently so as to reduce a user's sensation that the periphery of a mouth end portion

of the article may be too hot.

[0015] Further, the cooling and nucleation of such peripheral aerosol travelling outside of the inner channel may be enhanced by external air entering the outer tube via a dedicated ventilation zone provided downstream of the upstream end of the inner body.

[0016] As used herein, the term "aerosol-generating article" is used to describe an article comprising an aerosol-generating substrate that is heated to generate an inhalable aerosol for delivery to a user.

[0017] As used herein, the term "aerosol-generating substrate" is used to describe a substrate comprising aerosol-generating material that is capable of releasing upon heating volatile compounds that can generate an aerosol.

[0018] As used herein, the term "aerosol" is used to describe a dispersion of solid particles, or liquid droplets, or a combination of solid particles and liquid droplets, in a gas. The aerosol may be visible or invisible. The aerosol may include vapours of substances that are ordinarily liquid or solid at room temperature as well as solid particles, or liquid droplets, or a combination of solid particles and liquid droplets.

[0019] As used herein, the term "aerosol-generating device" is used to describe a device that interacts with the aerosol-generating substrate of the aerosol-generating article to generate an aerosol.

[0020] The aerosol-generating article has a proximal end through which, in use, an aerosol exits the aerosol-generating article for delivery to a user. The proximal end of the aerosol-generating article may also be referred to as the downstream end or mouth end of the aerosol-generating article. In use, a user draws directly or indirectly on the proximal end of the aerosol-generating article in order to inhale an aerosol generated by the aerosol-generating article.

[0021] The aerosol-generating article has a distal end. The distal end is opposite the proximal end. The distal end of the aerosol-generating article may also be referred to as the upstream end of the aerosol-generating article.

[0022] Components of the aerosol-generating article may be described as being upstream or downstream of one another based on their relative positions between the proximal end of the aerosol-generating article and the distal end of the aerosol-generating article.

[0023] As used herein, the term "longitudinal" is used to describe the direction between the upstream end and the downstream end of the aerosol-generating article. In use, air is drawn through the aerosol-generating article in the longitudinal direction.

[0024] As used herein, the term "length" is used to describe the maximum dimension of the aerosol-generating article or a component of the aerosol-generating article in the longitudinal direction.

[0025] As used herein, the term "transverse" is used to describe the direction perpendicular to the longitudinal direction. Unless otherwise stated, references to the "cross-section" of the aerosol-generating article or a

component of the aerosol-generating article refer to the transverse cross-section.

[0026] As used herein the term "width" is used to describe the maximum dimension of the aerosol-generating article and components of the aerosol-generating article in the transverse direction. Where the aerosol-generating article has a substantially circular cross-section, the width of the aerosol-generating article corresponds to the diameter of the aerosol-generating article. Where a component of the aerosol-generating article has a substantially circular cross-section, the width of the component of the aerosol-generating article corresponds to the diameter of the component of the aerosol-generating article.

[0027] As used herein, the term "thickness" is used to describe the maximum dimension of the aerosol-generating article or a component of the aerosol-generating article in a direction perpendicular to both the longitudinal direction and the transverse direction, unless otherwise stated.

[0028] As used herein, the term "elongate" is used to describe a component or element having a length that is greater than the width and the thickness thereof. For example, the length of an elongate component or element may be at least twice the width thereof. An elongate component or element may have a width that is substantially the same as the thickness thereof. For example, an elongate element may have a substantially square cross-section or a substantially circular cross-section. An elongate component or element may have a width that is greater than the thickness thereof. For example, an elongate element may have a substantially rectangular cross-section or a substantially elliptical or oval circular cross-section.

[0029] As used herein in relation to the aerosol-generating substrate, the term "strand" describes an elongate element of aerosol-generating material having a length that is substantially greater than the width and the thickness thereof.

[0030] As used herein in relation to the aerosol-generating substrate, the term "density" refers to the bulk density of the aerosol-generating substrate of the aerosol-generating article. The density of the aerosol-generating substrate is calculated by dividing the mass of the aerosol-generating substrate in the aerosol-generating article by the volume occupied by the aerosol-generating substrate in the aerosol-generating article. For example, where the aerosol-generating substrate of the aerosol-generating article is substantially cylindrical and comprises a mass of aerosol-generating substrate material circumscribed by a wrapper, the density of the aerosol-generating substrate is equal to the mass of the aerosol-generating substrate divided by the cylindrical volume bounded by the wrapper.

[0031] As used herein, the term "susceptor element" is used to describe an element comprising a susceptor material that is capable of converting electromagnetic energy into heat. When located within an alternating or

fluctuating electromagnetic field, at least one of hysteresis losses and eddy currents induced in the susceptor element cause heating of the susceptor element.

[0032] As used herein, the term "nicotine" is used to describe nicotine, a nicotine base or a nicotine salt. In embodiments in which the aerosol-generating substrate comprises a nicotine base or a nicotine salt, the amounts of nicotine recited herein are the amount of free base nicotine or amount of protonated nicotine, respectively.

[0033] As used herein, the term "tobacco cut filler" is used to describe an aerosol-generating substrate comprising a plurality of strands of tobacco lamina.

[0034] As used herein, the term "homogenised plant material" is used to describe a material formed by agglomerating particulate plant material. Homogenised plant material may be formed by agglomerating particles of plant material obtained by pulverising, grinding or comminuting plant material. Homogenised plant material may be produced by casting, extrusion, paper making processes or other suitable processes known in the art.

[0035] As used herein, the term "homogenised tobacco material" is used to describe a material formed by agglomerating particulate tobacco material.

[0036] As used herein, the term "gel" is used to describe a substantially dilute cross-linked material, which exhibits no flow in the steady state.

[0037] As used herein, the term "hollow tubular element" or "tube" is used to describe a generally cylindrical element having a lumen along a longitudinal axis thereof.

The hollow tubular element or tube may have a substantially circular, oval or elliptical cross-section. The lumen may have a substantially circular, oval or elliptical cross-section. In particular, the term "hollow tubular element" or "tube" is used to describe an element defining at least one airflow conduit establishing an uninterrupted fluid communication between an upstream end of the hollow tubular element and a downstream end of the hollow tubular element.

[0038] In the context of the present disclosure, a hollow tubular element or tube provides an unrestricted flow channel. This means that the hollow tubular element or tube provides a negligible level of resistance to draw (RTD). As used herein, the term "negligible level of RTD" is used to describe an RTD of less than 1 mm H₂O per 10 millimetres of length of the hollow tubular element or tube, less than 0.4 mm H₂O per 10 millimetres of length of the hollow tubular element or tube, or less than 0.1 mm H₂O per 10 millimetres of length of the hollow tubular element or tube. The flow channel should therefore be free from any components that would obstruct the flow of air in a longitudinal direction. The flow channel may be substantially empty.

[0039] As used herein, term "ventilation level" is used to denote a volume ratio between the airflow admitted into the aerosol-generating article via a ventilation zone (ventilation airflow) and an airflow exiting the aerosol-generating article via the mouth end, or downstream end. The greater the ventilation airflow, the higher the dilution of the

aerosol flow delivered to a user. Increasing the ventilation level may increase a level of cooling of the aerosol flow prior to delivery to a user. The ventilation level is measured on the aerosol-generating article on its own - that is, without inserting the aerosol-generating article in a suitable aerosol-generating device adapted to heat the aerosol-generating substrate.

[0040] Unless stated otherwise, percentages by weight of components of the aerosol-generating substrate recited herein are based on the dry weight of the aerosol-generating substrate.

[0041] Unless stated otherwise, percentages by weight of components of the aerosol-generating material recited herein are based on the dry weight of the aerosol-generating material.

[0042] Unless otherwise stated, the resistance to draw (RTD) of the aerosol-generating article or a component of the aerosol-generating article is measured in accordance with ISO 6565-2015 at a volumetric flow rate of 17.5 millilitres per second at the proximal end of the aerosol-generating article or the component thereof at a temperature of 22 degrees Celsius, a pressure of 101 kPa (760 Torr) and a relative humidity of 60%.

[0043] The air channelling element may comprise one or more peripheral channels located between the outer tube and the inner body. During use of the aerosol-generating article, aerosol generated by the aerosol-generating substrate may flow through the one or more peripheral channels and the inner channel. This segregation of aerosol downstream of the aerosol-generating substrate may help to avoid a user experiencing an uncomfortably warm sensation on the lips of the user during use of the aerosol-generating article. Aerosol flowing through the one or more peripheral channels may be cooled by conduction due to the proximity of the one or more peripheral channels and the external environment. As discussed further below, the aerosol-generating article may comprise a ventilation zone providing fluid communication between the exterior of the aerosol-generating article and the one or more peripheral channels. This may help to further cool aerosol flowing through the one or more peripheral channels.

[0044] Each of the one or more peripheral channels may be defined by the outer tube and the inner body. In particular, each of the one or more peripheral channels may be defined by an internal surface of the outer tube and an external surface of the inner body.

[0045] Each of the one or more peripheral channels may extend substantially along the entire length of the inner body.

[0046] The length of each of the one or more peripheral channels may be substantially the same as the length of the inner body. The length of each of the one or more peripheral channels may be substantially the same as the length of the inner channel.

[0047] The one or more peripheral channels may substantially surround the inner channel.

[0048] The aerosol-generating article may comprise a

plurality of peripheral channels.

[0049] Each peripheral channel may have substantially the same cross-sectional area as another peripheral channel. The plurality of peripheral channels may be substantially equally spaced around the inner channel.

[0050] The aerosol-generating article may comprise up to six, up to five, up to four, or up to three peripheral channels. The aerosol-generating article may have only two, three, four, five, or six peripheral channels.

[0051] At least one of the one or more peripheral channels may be substantially empty. Each of the one or more peripheral channels may be substantially empty.

[0052] At least one of the one or more peripheral channels may be at least partially filled. For example, the air channelling element may comprise a porous body located in at least one of the one or more peripheral channels. As another example, the air channelling element may comprise a polylactic acid (PLA) film located in at least one of the one or more peripheral channels. This may improve cooling of aerosol flowing through the at least one of the one or more peripheral channels.

[0053] The length of the inner body may be at least 20 percent, at least 25 percent, or at least 30 percent of the length of the air channelling element.

[0054] The length of the inner body may be less than or equal to 80 percent, less than or equal to 70 percent, or less than or equal to 60 percent of the length of the air channelling element.

[0055] The length of the inner body may be between 20 percent and 80 percent, between 20 percent and 70 percent, or between 20 percent and 60 percent of the length of the air channelling element.

[0056] The length of the inner body may be between 25 percent and 80 percent, between 25 percent and 70 percent, or between 25 percent and 60 percent of the length of the air channelling element.

[0057] The length of the inner body may be between 30 percent and 80 percent, between 30 percent and 70 percent, or between 30 percent and 60 percent of the length of the air channelling element.

[0058] The length of the inner body may be selected based on a desired degree of cooling of aerosol generated by the aerosol-generating substrate. In particular, the length of the inner body may be selected based on a desired degree of cooling of aerosol in the air channelling element close to the periphery of the air channelling element.

[0059] Increasing the length of the inner body may mean that aerosol flows through a longer inner channel having a reduced cross-sectional area. This may increase cooling of aerosol generated by the aerosol-generating substrate.

[0060] Where the aerosol-generating article comprises one or more peripheral channels, increasing the length of the inner body may increase the length through which aerosol generated by the aerosol-generating substrate is separated into the one or more peripheral channels and the inner channel. This may increase cooling of

aerosol generated by the aerosol-generating substrate. In particular, this may increase cooling of aerosol in the air channelling element close to the periphery of the air channelling element. This may be particularly desired where the aerosol-generating substrate is configured to be heated from the outside.

[0061] The inner body may have a length of at least 4 millimetres, at least 6 millimetres, or at least 8 millimetres.

[0062] The inner body may have a length of less than or equal to 18 millimetres, less than or equal to 16 millimetres, or less than or equal to 14 millimetres.

[0063] The inner body may have a length of between 4 millimetres and 18 millimetres, between 4 millimetres and 16 millimetres, or between 4 millimetres and 14 millimetres.

[0064] The inner body may have a length of between 6 millimetres and 18 millimetres, between 6 millimetres and 16 millimetres, or between 6 millimetres and 14 millimetres.

[0065] The inner body may have a length of between 8 millimetres and 18 millimetres, between 8 millimetres and 16 millimetres, or between 8 millimetres and 14 millimetres.

[0066] The length of the inner body may define the length of the inner channel. The inner channel may extend along substantially the entire length of the inner body. The inner channel may extend from the upstream end of the inner body to the downstream end of the inner body. The inner channel may have substantially the same length as the inner body.

[0067] The length of the inner channel may be at least 20 percent, at least 25 percent, or at least 30 percent of the length of the air channelling element.

[0068] The length of the inner channel may be less than or equal to 80 percent, less than or equal to 70 percent, or less than or equal to 60 percent of the length of the cooling element.

[0069] The length of the inner channel may be between 20 percent and 80 percent, between 20 percent and 70 percent, or between 20 percent and 60 percent of the length of the air channelling element.

[0070] The length of the inner channel may be between 25 percent and 80 percent, between 25 percent and 70 percent, or between 25 percent and 60 percent of the length of the air channelling element.

[0071] The length of the inner channel may be between 30 percent and 80 percent, between 30 percent and 70 percent, or between 30 percent and 60 percent of the length of the cooling element.

[0072] The length of the inner channel may be selected based on a desired degree of cooling of aerosol generated by the aerosol-generating substrate. In particular, the length of the inner channel may be selected based on a desired degree of cooling of aerosol in the air channelling element close to the periphery of the air channelling element.

[0073] Increasing the length of the inner channel may mean that aerosol flows through a longer channel having

a reduced cross-sectional area. This may increase cooling of aerosol generated by the aerosol-generating substrate.

[0074] Where the aerosol-generating article comprises one or more peripheral channels, increasing the length of the inner channel may increase the length through which aerosol generated by the aerosol-generating substrate is separated into the one or more peripheral channels and the inner channel. This may increase cooling of aerosol generated by the aerosol-generating substrate. In particular, this may increase cooling of aerosol in the air channelling element close to the periphery of the air channelling element. This may be particularly desired where the aerosol-generating substrate is configured to be heated from the outside.

[0075] The inner channel may have a length of at least 4 millimetres, at least 6 millimetres, or at least 8 millimetres.

[0076] The inner channel may have a length of less than or equal to 18 millimetres, less than or equal to 16 millimetres, or less than or equal to 14 millimetres.

[0077] The inner channel may have a length of between 4 millimetres and 18 millimetres, between 4 millimetres and 16 millimetres, or between 4 millimetres and 14 millimetres.

[0078] The inner channel may have a length of between 6 millimetres and 18 millimetres, between 6 millimetres and 16 millimetres, or between 6 millimetres and 14 millimetres.

[0079] The inner channel may have a length of between 8 millimetres and 18 millimetres, between 8 millimetres and 16 millimetres, or between 8 millimetres and 14 millimetres.

[0080] The upstream end of the inner body may be located away from the upstream end of the air channelling element. In other words, the upstream end of the inner body may not be aligned with the upstream end of the air channelling element, and there is a longitudinal displacement between the upstream end of the inner body and the upstream end of the air channelling element.

[0081] The upstream end of the inner body may be located away from the upstream end of the air channelling element by at least 20 percent, at least 30 percent, or at least 40 percent of the length of the air channelling element.

[0082] The upstream end of the inner body may be located away from the upstream end of the air channelling element by less than or equal to 80 percent, less than or equal to 75 percent, or less than or equal to 70 percent of the length of the air channelling element.

[0083] The upstream end of the inner body may be located away from the upstream end of the air channelling element by between 20 percent and 80 percent, between 20 percent and 75 percent, or between 20 percent and 70 percent of the length of the air channelling element.

[0084] The upstream end of the inner body may be

located away from the upstream end of the air channelling element by between 30 percent and 80 percent, between 30 percent and 75 percent, or between 30 percent and 70 percent of the length of the air channelling element.

[0085] The upstream end of the inner body may be located away from the upstream end of the air channelling element by between 40 percent and 80 percent, between 40 percent and 75 percent, or between 40 percent and 70 percent of the length of the air channelling element.

[0086] The longitudinal displacement between the upstream end of the inner body and the upstream end of the air channelling element may be selected based on a desired temperature profile of aerosol across the air channelling element and exiting the air channelling element.

[0087] Where the aerosol-generating substrate is configured to be heated from the outside, it may be desirable to increase the longitudinal displacement between the upstream end of the inner body and the upstream end of the air channelling element. Increasing the longitudinal displacement between the upstream end of the inner body and the upstream end of the air channelling element may result in increased mixing of aerosol in the air channelling element upstream of the inner body and a more homogeneous temperature profile of aerosol across the air channelling element. This may help to avoid a user experiencing an uncomfortably warm sensation on the lips of the user during use of the aerosol-generating article.

[0088] Where the aerosol-generating substrate is configured to be heated from the inside, it may be desirable to limit the longitudinal displacement between the upstream end of the inner body and the upstream end of the air channelling element. In aerosol-generating articles with such aerosol-generating substrate, aerosol in the air channelling element towards the periphery of the air channelling element may be cooler than aerosol in the air channelling element towards the central or longitudinal axis of the air channelling element. It may be advantageous to retain such temperature profile of aerosol across the air channelling element to help avoid a user experiencing an uncomfortably warm sensation on the lips of the user during use of the aerosol-generating article.

[0089] The upstream end of the inner body may be located away from the upstream end of the air channelling element by at least 4 millimetres, at least 6 millimetres, or at least 8 millimetres.

[0090] The upstream end of the inner body may be located away from the upstream end of the air channelling element by less than or equal to 18 millimetres, less than or equal to 16 millimetres, or less than or equal to 14 millimetres.

[0091] The upstream end of the inner body may be located away from the upstream end of the air channelling element by between 4 millimetres and 18 millimetres,

between 4 millimetres and 16 millimetres, or between 4 millimetres and 14 millimetres.

[0092] The upstream end of the inner body may be located away from the upstream end of the air channelling element by between 6 millimetres and 18 millimetres, between 6 millimetres and 16 millimetres, or between 6 millimetres and 14 millimetres.

[0093] The upstream end of the inner body may be located away from the upstream end of the air channelling element by between 8 millimetres and 18 millimetres, between 8 millimetres and 16 millimetres, or between 8 millimetres and 14 millimetres.

[0094] The inner body may be shorter than the outer tube.

[0095] The upstream end of the inner body may be located away from the upstream end of the outer tube.

[0096] The upstream end of the inner body may be located away from the upstream end of the outer tube by at least 20 percent, at least 30 percent, or at least 40 percent of the length of the air channelling element.

[0097] The upstream end of the inner body may be located away from the upstream end of the outer tube by less than or equal to 80 percent, less than or equal to 75 percent, or less than or equal to 70 percent of the length of the air channelling element.

[0098] The upstream end of the inner body may be located away from the upstream end of the outer tube by between 20 percent and 80 percent, between 20 percent and 75 percent, or between 20 percent and 70 percent of the length of the air channelling element.

[0099] The upstream end of the inner body may be located away from the upstream end of the outer tube by between 30 percent and 80 percent, between 30 percent and 75 percent, or between 30 percent and 70 percent of the length of the air channelling element.

[0100] The upstream end of the inner body may be located away from the upstream end of the outer tube by between 40 percent and 80 percent, between 40 percent and 75 percent, or between 40 percent and 70 percent of the length of the air channelling element.

[0101] The longitudinal displacement between the upstream end of the inner body and the upstream end of the outer tube may be selected based on a desired temperature profile of aerosol across the air channelling element and exiting the air channelling element.

[0102] The upstream end of the inner body may be located away from the upstream end of the outer tube by at least 4 millimetres, at least 6 millimetres, or at least 8 millimetres.

[0103] The upstream end of the inner body may be located away from the upstream end of the outer tube by less than or equal to 18 millimetres, less than or equal to 16 millimetres, or less than or equal to 14 millimetres.

[0104] The upstream end of the inner body may be located away from the upstream end of the outer tube by between 4 millimetres and 18 millimetres, between 4 millimetres and 16 millimetres, or between 4 millimetres and 14 millimetres.

[0105] The upstream end of the inner body may be located away from the upstream end of the outer tube by between 6 millimetres and 18 millimetres, between 6 millimetres and 16 millimetres, or between 6 millimetres and 14 millimetres.

[0106] The upstream end of the inner body may be located away from the upstream end of the outer tube by between 8 millimetres and 18 millimetres, between 8 millimetres and 16 millimetres, or between 8 millimetres and 14 millimetres.

[0107] The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate.

[0108] The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by at least 20 percent, at least 30 percent, or at least 40 percent of the length of the air channelling element.

[0109] The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by less than or equal to 80 percent, less than or equal to 75 percent, or less than or equal to 70 percent of the length of the air channelling element.

[0110] The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by between 20 percent and 80 percent, between 20 percent and 75 percent, or between 20 percent and 70 percent of the length of the air channelling element.

[0111] The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by between 30 percent and 80 percent, between 30 percent and 75 percent, or between 30 percent and 70 percent of the length of the air channelling element.

[0112] The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by between 40 percent and 80 percent, between 40 percent and 75 percent, or between 40 percent and 70 percent of the length of the air channelling element.

[0113] The longitudinal displacement between the upstream end of the inner body and the downstream end of the aerosol-generating substrate may be selected based on a desired temperature profile of aerosol across the air channelling element and exiting the air channelling element.

[0114] The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by at least 4 millimetres, at least 6 millimetres, or at least 8 millimetres.

[0115] The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by less than or equal to 18 millimetres, less than or equal to 16 millimetres, or less than or equal to 14 millimetres.

[0116] The upstream end of the inner body may be located away from the downstream end of the aerosol-

generating substrate by between 4 millimetres and 18 millimetres, between 4 millimetres and 16 millimetres, or between 4 millimetres and 14 millimetres.

5 **[0117]** The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by between 6 millimetres and 18 millimetres, between 6 millimetres and 16 millimetres, or between 6 millimetres and 14 millimetres.

10 **[0118]** The upstream end of the inner body may be located away from the downstream end of the aerosol-generating substrate by between 8 millimetres and 18 millimetres, between 8 millimetres and 16 millimetres, or between 8 millimetres and 14 millimetres.

15 **[0119]** The air channelling element may comprise a cavity defined by an internal surface of the outer tube. The cavity is empty.

[0120] The air channelling element may comprise a cavity extending from the upstream end of the air channelling element towards the downstream end of the air channelling element. The air channelling element may comprise a cavity extending from the upstream end of the air channelling element towards the upstream end of the inner body. The air channelling element may comprise a cavity extending from the upstream end of the inner body towards the upstream end of the air channelling element. The air channelling element may comprise a cavity extending from the upstream end of the air channelling element to the upstream end of the inner body.

20 **[0121]** The aerosol-generating article may comprise a cavity located between the aerosol-generating substrate and the inner body of the air channelling element. The cavity may be delimited by the downstream end of the aerosol-generating substrate and the upstream end of the inner body.

25 **[0122]** The air channelling element may have a length of at least 8 millimetres, at least 12 millimetres, or at least 15 millimetres.

[0123] The air channelling element may have a length of less than or equal to 28 millimetres, less than or equal to 25 millimetres, or less than or equal to 22 millimetres.

30 **[0124]** The air channelling element may have a length of between 8 millimetres and 28 millimetres, between 8 millimetres and 25 millimetres, or between 8 millimetres and 22 millimetres.

35 **[0125]** The air channelling element may have a length of between 12 millimetres and 28 millimetres, between 12 millimetres and 25 millimetres, or between 12 millimetres and 22 millimetres.

40 **[0126]** The air channelling element may have a length of between 15 millimetres and 28 millimetres, between 15 millimetres and 25 millimetres, or between 15 millimetres and 22 millimetres.

45 **[0127]** The length of the outer tube may define the length of the air channelling element. The length of the outer tube may be substantially the same as the length of the air channelling element. The outer tube may extend along substantially the entire length of the air channelling element. In other words, the outer tube may extend from

the upstream end of the air channelling element to the downstream end of the air channelling element.

[0128] The outer tube may have a length of at least 8 millimetres, at least 12 millimetres, or at least 15 millimetres.

[0129] The outer tube may have a length of less than or equal to 28 millimetres, less than or equal to 25 millimetres, or less than or equal to 22 millimetres.

[0130] The outer tube may have a length of between 8 millimetres and 28 millimetres, between 8 millimetres and 25 millimetres, or between 8 millimetres and 22 millimetres.

[0131] The outer tube may have a length of between 12 millimetres and 28 millimetres, between 12 millimetres and 25 millimetres, or between 12 millimetres and 22 millimetres.

[0132] The outer tube may have a length of between 15 millimetres and 28 millimetres, between 15 millimetres and 25 millimetres, or between 15 millimetres and 22 millimetres.

[0133] The air channelling element may comprise a single inner channel.

[0134] The inner channel may have a cross-sectional area of at least 15 percent, at least 20 percent, or at least 25 percent of a cross-sectional area of the air channelling element in a same transverse plane.

[0135] The inner channel may have a cross-sectional area of less than or equal to 40 percent, less than or equal to 35 percent, or less than or equal to 30 percent of a cross-sectional area of the air channelling element in a same transverse plane.

[0136] Reducing the cross-sectional area of the inner channel may increase cooling of aerosol generated by the aerosol-generating substrate. In particular, reducing the cross-sectional area of the inner channel may increase cooling of aerosol generated by the aerosol-generating substrate that passes through the inner channel.

[0137] Reducing the cross-sectional area of the inner channel may increase the volume of aerosol generated by the aerosol-generating substrate that passes through the one or more peripheral channels, where present. This may further increase cooling of aerosol generated by the aerosol-generating substrate.

[0138] The inner channel may have a cross-sectional area of between 15 percent and 40 percent, between 15 percent and 35 percent, or between 15 percent and 30 percent of a cross-sectional area of the air channelling element in a same transverse plane.

[0139] The inner channel may have a cross-sectional area of between 20 percent and 40 percent, between 20 percent and 35 percent, or between 20 percent and 30 percent of a cross-sectional area of the air channelling element in a same transverse plane.

[0140] The inner channel may have a cross-sectional area of between 25 percent and 40 percent, between 25 percent and 35 percent, or between 25 percent and 30 percent of a cross-sectional area of the air channelling element in a same transverse plane.

[0141] The cross-sectional area of the inner channel described herein may refer to the cross-sectional area of the inner channel at the downstream end of the inner channel. The cross-sectional area of the inner channel described herein may refer to the cross-sectional area of the inner channel at the downstream end of the inner body.

[0142] The inner channel may have a cross-sectional area of at least 6 square millimetres, at least 8 square millimetres, or at least 10 square millimetres.

[0143] The inner channel may have a cross-sectional area of less than or equal to 16 square millimetres, less than or equal to 14 square millimetres, or less than or equal to 12 square millimetres.

[0144] The inner channel may have a cross-sectional area of between 6 square millimetres and 16 square millimetres, between 6 square millimetres and 14 square millimetres, or between 6 square millimetres and 12 square millimetres.

[0145] The inner channel may have a cross-sectional area of between 8 square millimetres and 16 square millimetres, between 8 square millimetres and 14 square millimetres, or between 8 square millimetres and 12 square millimetres.

[0146] The inner channel may have a cross-sectional area of between 10 square millimetres and 16 square millimetres, between 10 square millimetres and 14 square millimetres, or between 10 square millimetres and 12 square millimetres.

[0147] The width of the inner channel may be at least 30 percent, at least 40 percent, or at least 50 percent of the width of the air channelling element.

[0148] The width of the inner channel may be substantially the same as the width of the air channelling element. For example, where the air channelling element is substantially cylindrical, the inner channel may extend substantially across the diameter of the air channelling element.

[0149] The width of the inner channel may be up to 90 percent, up to 80 percent, or up to 70 percent of the width of the air channelling element.

[0150] The width of the inner channel may be between 30 percent and 90 percent, between 30 percent and 80 percent, or between 30 percent and 70 percent of the width of the air channelling element.

[0151] The width of the inner channel may be between 40 percent and 90 percent, between 40 percent and 80 percent, or between 40 percent and 70 percent of the width of the air channelling element.

[0152] The width of the inner channel may be between 50 percent and 90 percent, between 50 percent and 80 percent, or between 50 percent and 70 percent of the width of the air channelling element.

[0153] The inner channel may have a width of at least 2 millimetres, at least 3 millimetres, or at least 4 millimetres.

[0154] The inner channel may have a width of less than or equal to 7 millimetres, less than or equal to 6 millimetres, or less than or equal to 5 millimetres.

[0155] The inner channel may have a width of between 2 millimetres and 7 millimetres, between 2 millimetres and 6 millimetres, or between 2 millimetres and 5 millimetres.

[0156] The inner channel may have a width of between 3 millimetres and 7 millimetres, between 3 millimetres and 6 millimetres, or between 3 millimetres and 5 millimetres.

[0157] The inner channel may have a width of between 4 millimetres and 7 millimetres, between 4 millimetres and 6 millimetres, or between 4 millimetres and 5 millimetres.

[0158] The width of the air channelling element may be substantially the same as the width of the aerosol-generating article.

[0159] The air channelling element may have a width of at least 5 millimetres, at least 6 millimetres, or at least 7 millimetres. The air channelling element may have a width of less than or equal to 12 millimetres, less than or equal to 10 millimetres, or less than or equal to 8 millimetres. For example, the air channelling element may have a width of 7.1 millimetres.

[0160] Where the air channelling element has a substantially circular cross section, the width of the air channelling element corresponds to the diameter of the air channelling element.

[0161] The width of the outer tube may be substantially the same as the width of the air channelling element. The width of the outer tube may be substantially the same as the width of the aerosol-generating article.

[0162] The outer tube may have a width of at least 5 millimetres, at least 6 millimetres, or at least 7 millimetres. The outer tube may have a width of less than or equal to 12 millimetres, less than or equal to 10 millimetres, or less than or equal to 8 millimetres. For example, the outer tube may have a width of 7.1 millimetres.

[0163] Where the outer tube has a substantially circular cross section, the width of the air channelling element corresponds to the diameter of the outer tube.

[0164] The aerosol-generating article comprises a ventilation zone at a location downstream of the aerosol-generating substrate. The aerosol-generating article may comprise one or more ventilation zones at a location downstream of the aerosol-generating substrate. Air drawn into the aerosol-generating article through a ventilation zone may help to cool the stream of aerosol generated by the aerosol-generating substrate prior to delivery to a user.

[0165] The aerosol-generating article may comprise one or more ventilation zones configured to establish fluid communication between the exterior of the aerosol-generating article and the interior of the air channelling element. The aerosol-generating article may comprise one or more ventilation zones at a location along the air channelling element. The aerosol-generating article may comprise a single ventilation zone at a location along the air channelling element.

[0166] The aerosol-generating article may comprise

one or more ventilation zones configured to establish fluid communication between the exterior of the aerosol-generating article and the interior of the outer tube. The aerosol-generating article comprises a ventilation zone at a location along the outer tube. The aerosol-generating article may comprise one or more ventilation zones at a location along the outer tube. The aerosol-generating article may comprise a single ventilation zone at a location along the outer tube. The aerosol-generating article may comprise a plurality of ventilation zones at a location along the outer tube.

[0167] A ventilation zone may comprise one or more rows of apertures, or perforations, extending through the outer tube. A ventilation zone may comprise one or more rows of apertures, or perforations, extending through a wrapper of the aerosol-generating article. A ventilation zone may comprise one or more rows of apertures, or perforations, extending through both a wrapper of the aerosol-generating article and the outer tube.

[0168] A ventilation zone may comprise a single row of apertures, or perforations. A row of apertures, or perforations, may comprise between 8 to 30 apertures, or perforations.

[0169] Each aperture, or perforation, may have an opening area of at least 0.01 square millimetres. Each aperture, or perforation, may have an opening area of less than or equal to 1 square millimetre.

[0170] Each aperture, or perforation, may have a maximum dimension of at least 0.1 millimetre. Each aperture, or perforation, may have a maximum dimension of less than or equal to 1 millimetre.

[0171] A ventilation zone may extend transversely around the aerosol-generating article. Such a ventilation zone may be referred to as a transverse ventilation zone.

[0172] A ventilation zone may circumscribe the aerosol-generating article. For example, a ventilation zone may circumscribe the air channelling element or outer tube of the air channelling element. A ventilation zone may comprise one or more circumferential rows of apertures, or perforations.

[0173] The aerosol-generating article comprises a ventilation zone at a location along the outer tube and downstream of the upstream end of the inner body. The aerosol-generating article may comprise a ventilation zone at a location along the outer tube and downstream of the upstream end of the inner channel. Where the air channelling element comprises one or more peripheral channels, the ventilation zone may be configured to establish fluid communication between the exterior of the aerosol-generating article and the one or more peripheral channels.

[0174] A ventilation zone at a location along the outer tube and downstream of the upstream end of the inner body may efficiently cool aerosol in the one or more peripheral channels due to a smaller volume of aerosol passing through the one or more peripheral channels compared to the volume of aerosol generated by the aerosol-generating substrate. This may help to avoid a

user experiencing an uncomfortably warm sensation on the lips of the user during use of the aerosol-generating article.

[0175] The ventilation zone may be located less than or equal to 50 percent of the length of the inner body downstream of the upstream end of the inner body. In other words, the ventilation zone may be located downstream of the upstream end of the inner body by less than or equal to 50 percent of the length of the inner body. For example, the ventilation zone may be located downstream of the upstream end of the inner body and closer to the upstream end of the inner body than to the downstream end of the inner body.

[0176] The ventilation zone may be located less than or equal to 40 percent, or less than or equal to 30 percent of the length of the inner body downstream of the upstream end of the inner body.

[0177] The ventilation zone may be located at least 10 percent of the length of the inner body downstream of the upstream end of the inner body.

[0178] The ventilation zone may be located between 10 percent and 50 percent, between 10 percent and 40 percent, or between 10 percent and 30 percent of the length of the inner body downstream of the upstream end of the inner body.

[0179] A ventilation zone located closer to the upstream end of the inner body than the downstream end may help to efficiently cool aerosol in one or more peripheral channels along a majority of the length of the peripheral channel. This may help to avoid a user experiencing an uncomfortably warm sensation on the lips of the user during use of the aerosol-generating article.

[0180] Cooling of aerosol along a majority of the length of the peripheral channel may help to cool aerosol in the inner channel along a corresponding length by conduction.

[0181] Locating a ventilation zone closer to the upstream end of the inner body than the downstream end may help to avoid the ventilation zone being blocked by the lips of a user.

[0182] The ventilation zone may be located less than or equal to 4 millimetres, less than or equal to 3 millimetres, or less than or equal to 2 millimetre downstream of the upstream end of the inner body.

[0183] The ventilation zone may be located at least 1 millimetre downstream of the upstream end of the inner body.

[0184] The ventilation zone may be located between 1 millimetre and 4 millimetres, between 1 millimetre and 3 millimetres, or between 1 millimetre and 2 millimetres downstream of the upstream end of the inner body.

[0185] The aerosol-generating article may comprise another ventilation zone located along the outer tube and upstream of the upstream end of the inner body. Where the aerosol-generating article comprises a cavity located between the aerosol-generating substrate and the inner body of the air channelling element, the ventilation zone may be configured to establish fluid commu-

nication between the exterior of the aerosol-generating article and the cavity.

[0186] A ventilation zone located along the outer tube and upstream of the upstream end of the inner body may provide a cooling and diluting effect to aerosol generated by the aerosol-generating substrate prior to any segregation of aerosol by the inner body. Such a ventilation zone may therefore provide a cooling and diluting effect to aerosol across the air channelling element.

[0187] Where the aerosol-generating substrate is configured to be heated from the inside, admission of air into the outer tube through a ventilation zone located along the outer tube and upstream of the upstream end of the inner body may direct warmer aerosol in a central region of the outer tube through the inner channel. This may help to avoid a user experiencing an uncomfortably warm sensation on the lips of the user during use of the aerosol-generating article.

[0188] The aerosol-generating article may comprise both a ventilation zone located along the outer tube and downstream of the upstream end of the inner body, and a ventilation zone located along the outer tube and upstream of the upstream end of the inner body. Where this is the case, the ventilation zone located along the outer tube and downstream of the upstream end of the inner body may be referred to as a first ventilation zone or downstream ventilation zone, and the ventilation zone located along the outer tube and upstream of the upstream end of the inner body may be referred to as a second ventilation zone or upstream ventilation zone.

[0189] The ventilation level of the second ventilation zone may be greater than the ventilation level of the first ventilation zone. This may help to reduce the average temperature of aerosol delivered to a user across the aerosol-generating article to an acceptable level, while minimising any variation in temperature of aerosol across the aerosol-generating article.

[0190] The ventilation level of the second ventilation zone may be at least 1.2 times, at least 1.5 times, or at least 2 times the ventilation level of the first ventilation zone.

[0191] The ventilation level of the second ventilation zone may be less than or equal to 3 times the ventilation level of the first ventilation zone.

[0192] The ventilation level of the second ventilation zone may be between 1.2 times and 3 times, between 1.5 times and 3 times, or between 2 times and 3 times the ventilation level of the first ventilation zone.

[0193] The ventilation level of a first ventilation zone may be measured by occluding all other ventilation zones, if present, and drawing air from the mouth end of the aerosol-generating article so that air may flow through the front end or upstream end of the aerosol-generating article and the first ventilation zone into the aerosol-generating article. The ventilation level provided by the first ventilation level may be defined as the volume ratio between the airflow entering the aerosol-generating article through the first ventilation zone and the airflow

exiting the aerosol-generating article at the mouth end when measured as such.

[0194] The ventilation level of a second ventilation zone may be measured by occluding all other ventilation zones, if present, and drawing air from the mouth end of the aerosol-generating article so that air may flow through the front end or upstream end of the aerosol-generating article and the second ventilation zone into the aerosol-generating article. The ventilation level provided by the second ventilation level may be defined as the volume ratio between the airflow entering the aerosol-generating article through the second ventilation zone and the airflow exiting the aerosol-generating article at the mouth end when measured as such.

[0195] The first ventilation zone may have a ventilation level of at least 10 percent. The first ventilation zone may have a ventilation level of less than or equal to 25 percent, less than or equal to 20 percent, or less than or equal to 15 percent.

[0196] The second ventilation zone may have a ventilation level of at least 25 percent, at least 30 percent, or at least 35 percent. The second ventilation zone may have a ventilation level of less than or equal to 40 percent.

[0197] The resistance to draw through the first ventilation zone may be greater than the resistance to draw through the second ventilation zone. As such, more air may be drawn through the second ventilation zone than through the first ventilation zone during use of the aerosol-generating article.

[0198] Where the first ventilation zone comprises a plurality of apertures and the second ventilation zone comprises a plurality of apertures, the total opening area of the plurality of apertures of the second ventilation zone may be greater than the total opening area of the plurality of apertures of the first ventilation zone.

[0199] The total opening area of the plurality of apertures of the second ventilation zone may be at least 1.2 times, at least 1.5 times, or at least 2 times the total opening area of the plurality of apertures of the first ventilation zone.

[0200] The total opening area of the plurality of apertures of the second ventilation zone may be less than or equal to 3 times the total opening area of the plurality of apertures of the first ventilation zone.

[0201] The total opening area of the plurality of apertures of the second ventilation zone may be between 1.2 times and 3 times, between 1.5 times and 3 times, or between 2 times and 3 times the total opening area of the plurality of apertures of the first ventilation zone.

[0202] The aerosol-generating article may have a total ventilation level of at least 10 percent, at least 20 percent, or at least 30 percent.

[0203] The aerosol-generating article may have a ventilation level of less than or equal to 60 percent, less than or equal to 50 percent, or less than or equal to 40 percent.

[0204] The aerosol-generating article may have a ventilation level of between 10 percent and 60 percent, between 10 percent and 50 percent, or between 10

percent and 40 percent.

[0205] The aerosol-generating article may have a ventilation level of between 20 percent and 60 percent, between 20 percent and 50 percent, or between 20 percent and 40 percent.

[0206] The aerosol-generating article may have a ventilation level of between 30 percent and 60 percent, between 30 percent and 50 percent, or between 30 percent and 40 percent.

[0207] The total ventilation level of the aerosol-generating article may be measured by not occluding any of the ventilation zones present in the aerosol-generating article and drawing air from the mouth end of the aerosol-generating article of that air may flow through the front end or upstream end of the aerosol-generating article and the ventilation zones into the aerosol-generating article. The total ventilation level of the aerosol-generating article may be defined as the volume ratio between the sum of the airflow entering the aerosol-generating article through each of the ventilation zones and the airflow exiting the aerosol-generating article at the mouth end.

[0208] The air channelling element may be configured such that substantially all of the air that enters the inner channel during use of the aerosol-generating article is through the upstream end of the inner channel. That is, the inner channel may not be ventilated.

[0209] The aerosol-generating article may comprise a ventilation zone configured such that the one or more peripheral channels, where present, are ventilated, but the inner channel is not ventilated.

[0210] A ventilation zone may not extend through the inner body of the air channelling element. In particular, a plurality of apertures, or perforations, of a ventilation zone may not extend through the inner body of the air channelling element. The inner body may not comprise an aperture or perforation extending through a side wall of the inner body.

[0211] The air channelling element may be configured to establish fluid communication between the inner channel and one or more peripheral channels of the air channelling element. The air channelling element may be configured such that during use of the aerosol-generating article, aerosol may be drawn from the one or more peripheral channels into the inner channel. This may help to enhance nucleation of aerosol particles in the inner channel and cool the aerosol in the inner channel.

[0212] The aerosol-generating article may comprise a plurality of apertures or perforations through a wall of the inner body to establish fluid communication between the inner channel and one or more peripheral channels of the air channelling element. For example, the aerosol-generating article may comprise a plurality of apertures or perforations through a wall of a central portion of the inner body. The ventilation zone may extend longitudinally along the inner body.

[0213] The inner channel may have any suitable cross-sectional shape. For example, the inner channel may

have a substantially circular or substantially triangular cross-sectional shape. The inner channel may have a substantially rectangular or hexagonal cross-sectional shape. As another example, the inner channel may have an irregular cross-sectional shape.

[0214] The inner channel may have a substantially constant cross-sectional shape and size along the entire length of the inner channel.

[0215] The inner channel may be substantially cylindrical.

[0216] The central or longitudinal axis of the aerosol-generating article may pass through the inner channel. This may help to segregate a portion of aerosol having a higher temperature from a portion of aerosol having a lower temperature downstream of the aerosol-generating substrate.

[0217] The inner body may comprise a central portion defining the inner channel. The central portion may circumscribe the inner channel. The central portion may be arranged such that the central or longitudinal axis of the aerosol-generating article may pass through the inner channel.

[0218] The central portion of the inner body may extend substantially the entire length of the inner body. In other words, the central portion may extend from the upstream end of the inner body to the downstream end of the inner body. The central portion of the inner body may extend substantially the entire length of the inner channel.

[0219] The central portion of the inner body may have any suitable cross-sectional shape. For example, the central portion of the inner body may have a substantially circular, triangular, rectangular or hexagonal cross-sectional shape. As another example, the central portion of the inner body may have an irregular cross-sectional shape.

[0220] The central portion of the inner body may have a substantially constant cross-sectional shape and size along the entire length of the central portion.

[0221] The central portion of the inner body may be substantially tubular.

[0222] The inner body may comprise at least two extension portions in contact with an internal surface of the outer tube. The at least two extension portions may act as retention means to help to retain the inner body in the outer tube. The at least two extension portions may act as retention means to help to centre the inner body within the outer tube.

[0223] Each extension portion may extend from the central portion of the inner body to the outer tube. Each extension portion may extend outwardly from the central portion of the inner body to the outer tube. Each extension portion may extend radially from the central portion of the inner body to the outer tube.

[0224] The at least two extension portions may divide the space between the outer tube and the central portion of the inner body into one or more peripheral channels.

[0225] The at least two extension portions may be substantially equally spaced around the central portion.

Where the inner body comprises two extension portions, the extension portions may extend along the same plane. Where the inner body comprises two extension portions, the extension portions may be parallel to each other.

[0226] Each extension portion may have a substantially constant thickness. Each extension portion may have a substantially constant width along a transverse direction. Each extension portion may be substantially planar.

[0227] Each extension portion may have a proximal end connected to the central portion and a distal end that engages with the internal surface of the outer tube. The proximal end of each extension portion may be open. The distal end of each extension portion may be open or closed.

[0228] Both the central portion of the inner body and the at least two extension portions of the inner body may define the inner channel.

[0229] Each extension portion may define a part of the inner channel. Each extension portion may comprise two extension walls extending from the central portion of the inner body to the outer tube, wherein a space is defined between the two extension walls. The space defined between the two extension walls may form a part of the inner channel. The space defined between the two extension walls may be empty. The two extension walls may be substantially parallel. Each extension portion may be defined substantially by two substantially parallel extension walls.

[0230] As an example, the air channelling element may comprise; an outer tube; an inner body located within the outer tube; an inner channel defined within the inner body, wherein the inner body comprises a central portion and at least two extension portions, wherein both the central portion of the inner body and the at least two extension portions of the inner body define the inner channel, wherein each extension portion comprises two substantially parallel extension walls extending from the central portion of the inner body to the outer tube.

[0231] A ratio of the thickness of each extension portion to the width of the central portion may be less than or equal to 0.5, or less than or equal to 0.25. A ratio of the thickness of each extension portion to the width of the central portion may be at least 0.1. A ratio of the thickness of each extension portion to the width of the central portion may be between 0.1 and 0.5, or between 0.1 and 0.25.

[0232] The thickness of an extension portion may be measured in the direction substantially perpendicular to the direction in which the extension portion extends from the central portion of the inner body to the outer tube. Where an extension portion comprises two substantially parallel extension walls, the thickness of the extension portion is measured perpendicularly to the extension walls.

[0233] Each extension portion may not define a part of the inner channel. Each extension portion may comprise a single wall extending from the central portion of the

inner body to the outer tube. Each extension portion may comprise a fin extending from the central portion of the inner body to the outer tube. Each extension portion may comprise a fin extending from the central portion of the inner body to the outer tube.

[0234] The inner body may comprise up to six, up to five, up to four, or up to three extension portions. The inner body may have only two, three, four, five, or six extension portions.

[0235] Each of the extension portions may extend the entire length of the inner body.

[0236] The maximum width of the inner body may substantially correspond to the internal diameter of the outer tube. Such a maximum width may be measured from the distal end of a first extension portion to the distal end of a second extension portion.

[0237] The inner body may comprise an upstream end wall at the upstream end of the central portion. The upstream end wall may delimit an opening for airflow between the inner channel and the exterior of the inner body. Airflow into the inner channel via the opening may increase a level of turbulence of the flow in the inner channel. This may increase nucleation of aerosol particles in the inner channel and help to cool the aerosol in the inner channel.

[0238] The upstream end wall may be a folded end portion of the inner body.

[0239] The inner body may be formed from any suitable material. Suitable materials include, but are not limited to: paper based materials, such as paper and cardboard; and polylactic acid (PLA). Preferably, the inner body is formed from a paper based material.

[0240] The inner body may be integrally formed. For example, where the inner body comprises a central portion and at least two extension portions, the central portion and the at least two extension portions may be integrally formed. The inner body may be formed from a single sheet of material. The inner body may be formed from folding a single sheet of material. The distal end of each extension portion may be closed.

[0241] The inner body may be formed from pressing a single tube of material. The inner body may be formed from vacuum forming a single tube of material. The inner body may be formed from placing a single tube of material around a rod having a cross section matching the desired inner body shape and drawing air into the rod using suction to conform the tube of material to the shape of the rod.

[0242] The inner body may be formed from multiple components or parts. The inner body may be formed from two components or parts. The inner body may be formed from multiple sheets of material. Each component or part of the inner body may be formed from a sheet of material. The inner body may be formed from two sheets of material. The inner body may be formed from folding multiple sheets of material. The components or parts of the inner body may have the same shape and size. The components or parts of the inner body may be

formed by using a press configured to deform the sheets into the desired shape. The distal end of each extension portion may be open.

[0243] Each component of the inner body may be formed from a sheet of material that has been deformed to have a semicircular, central raised portion and two curved flanges at each longitudinal side of the sheet, either side of the semicircular raised portion. The curved flanges may be formed from folding or bending the edges of the sheet of the component in the same direction as the central raised portion is raised.

[0244] Each extension portion may comprise at least one sealing flange located at the distal end. The sealing flange may be configured to engage with an internal surface of the outer tube. The flange may cooperate with and engage with the inner surface of the outer tube. Such engagement effectively forms a seal at each flange such that air and aerosol travelling within the inner channel cannot exit the inner body into a peripheral channel via open, distal ends of the extension portions. Each flange may be adhered to the internal surface of the outer tube.

[0245] The components of the inner body may be inserted into the outer tube in opposite orientations and parallel to each other (both longitudinally and transversely) to form the inner body. The central raised portions of the opposing components of the inner body may cooperate with each other to form a central portion of the inner body that is substantially tubular. The other portions (in other words, the non-raised portions) may cooperate with each other to form two extension portions of the inner body. The inner channel may be defined between both components. The distal ends of the extensions portions may be open.

[0246] The inner channel may be substantially empty.

[0247] The inner channel may be at least partially filled. For example, the air channelling element may comprise a porous body located within the inner channel. As another example, the air channelling element may comprise a polylactic acid (PLA) film located in the inner channel. This may improve cooling of aerosol flowing through the inner channel.

[0248] The aerosol-generating article may comprises one or more ventilation zones extending along the air channelling element. Such ventilation zones may be referred to as longitudinal ventilation zones. The one or more longitudinal ventilation zones may extend longitudinally along the length of the outer tube. The length of the one or more longitudinal ventilation zones may correspond to the length of the inner body. Each longitudinal ventilation zone may span from the upstream end of the inner body to the downstream end of the inner body. The longitudinal ventilation zone may be configured to establish fluid communication between the exterior of the air channelling element and the inner channel via a distal end of one of the extension portions. In other words, the longitudinal ventilation zone may be configured to establish fluid communication between the exterior of the air channelling element and the inner channel via the end of

one of the extension portions which engages with the outer tube.

[0249] Each longitudinal ventilation zone may be aligned with the distal end of each extension portion. Each longitudinal ventilation zone is configured to establish fluid communication between the exterior of the air channelling element and the inner channel via the distal end of the extension portion. External air may enter the inner channel via the one or more longitudinal ventilation zones. Each longitudinal ventilation zone may comprise a line of perforations extending through the wall of the outer tube. Such line of perforations may extend through any wrappers (not shown) circumscribing the outer tube.

[0250] The outer tube may comprise or be formed from one or more tubular segments. The tubular segments are non-integral with one another. In other words, the tubular segments are physically distinct from one another. The outer tube may comprise one or more tubular segments in an abutting end-to-end arrangement.

[0251] Preferably the outer tube comprises a single tubular segment. Preferably, the outer tube is a single tube.

[0252] The outer tube may comprise a plurality of tubular segments. For example, the outer tube may comprise or be formed from two tubular segments: a first tubular segment and a second tubular segment located upstream of the first tubular segment. The second tubular segment may be substantially empty. In other words, a cavity may be defined by the internal surface of the second tubular segment. The inner body may be located within the first tubular segment. The upstream end of the inner body may be substantially aligned with the upstream end of the first tubular segment. The downstream end of the inner body may be substantially aligned with the downstream end of the first tubular segment. In an aerosol-generating article comprising: an air channelling element having an outer tube comprising a first tubular segment and a second tubular segment located upstream of the first tubular segment; a first ventilation zone; and a second ventilation zone, the first ventilation zone may be at a location along the first tubular segment, and the second ventilation zone may be at a location along the second tubular segment.

[0253] The upstream end of the second tubular segment may define the upstream end of the outer tube. The downstream end of the first tubular segment may define the downstream end of the outer tube.

[0254] The second tubular segment may extend from the upstream end of the outer tube to the upstream end of the inner tube. The first tubular segment may extend from the downstream end of the second tubular segment to the downstream end of the outer tube.

[0255] The outer tube may have a substantially circular cross-sectional shape.

[0256] The outer tube may have a substantially constant cross-sectional shape and size along the entire length of the outer tube.

[0257] The outer tube may be substantially cylindrical.

[0258] The outer tube may be formed from any suitable material. Suitable materials include, but are not limited to: paper based materials, such as paper and cardboard; and polylactic acid (PLA). Preferably, the outer tube is formed from a paper based material.

[0259] The outer tube and the inner body may be separately formed. The outer tube and the inner body may be integrally formed.

[0260] The inner body may extend to the downstream end of the air channelling element. The inner body may extend from the downstream end of the air channelling element towards the upstream end of the air channelling element. The inner body may extend from the downstream end of the air channelling element to the upstream end of the air channelling element.

[0261] The downstream end of the inner body may be longitudinally aligned with the downstream end of the outer tube.

[0262] The air channelling element may comprise a porous body surrounding at least a part of the inner body. This may help to retain the inner body within the outer tube. This may particularly be the case where the inner body is not in contact with the outer tube. For example, the air channelling element may comprise a porous body surrounding the inner body where the inner body does not comprise an extension portion in contact with the outer tube. The porous body may be annular.

[0263] The porous body may have substantially the same width as the internal width of the outer tube.

[0264] The porous body may extend from a downstream end of the inner body towards the upstream end of the inner body. The porous body may extend from an upstream end of the inner body towards the downstream end of the inner body. The porous body may extend from the downstream end of the inner body to the upstream end of the inner body.

[0265] The aerosol-generating substrate may have a length of at least 4 millimetres, at least 6 millimetres, at least 8 millimetres, or at least 10 millimetres.

[0266] The aerosol-generating substrate may have a length of less than or equal to 45 millimetres, less than or equal to 35 millimetres, less than or equal to 25 millimetres, or less than or equal to 15 millimetres.

[0267] The aerosol-generating substrate may have a length of between 4 millimetres and 45 millimetres, between 4 millimetres and 35 millimetres, between 4 millimetres and 25 millimetres, or between 4 millimetres and 15 millimetres.

[0268] The aerosol-generating substrate may have a length of between 6 millimetres and 45 millimetres, between 6 millimetres and 35 millimetres, between 6 millimetres and 25 millimetres, or between 6 millimetres and 15 millimetres.

[0269] The aerosol-generating substrate may have a length of between 6 millimetres and 45 millimetres, between 6 millimetres and 35 millimetres, between 6 millimetres and 25 millimetres, or between 6 millimetres and

15 millimetres.

[0270] The aerosol-generating substrate may have a length of between 8 millimetres and 45 millimetres, between 8 millimetres and 35 millimetres, between 8 millimetres and 25 millimetres, or between 8 millimetres and 15 millimetres.

[0271] The aerosol-generating substrate may have a length of between 10 millimetres and 45 millimetres, between 10 millimetres and 35 millimetres, between 10 millimetres and 25 millimetres, or between 10 millimetres and 15 millimetres. For example, the aerosol-generating substrate may have a length of 11 millimetres or a length of 12 millimetres.

[0272] The aerosol-generating substrate may be substantially cylindrical.

[0273] The aerosol-generating substrate may have a substantially circular cross-section.

[0274] The aerosol-generating substrate may have an external diameter that is substantially the same as an external diameter of the aerosol-generating article.

[0275] The aerosol-generating substrate may have an external diameter of at least 5 millimetres, at least 6 millimetres, or at least 7 millimetres.

[0276] The aerosol-generating substrate may have an external diameter of less than or equal to 12 millimetres, less than or equal to 10 millimetres, or less than or equal to 8 millimetres.

[0277] The aerosol-generating substrate may have an external diameter of between 5 millimetres and 12 millimetres, between 5 millimetres and 10 millimetres, or between 5 millimetres and 8 millimetres.

[0278] The aerosol-generating substrate may have an external diameter of between 6 millimetres and 12 millimetres, between 6 millimetres and 10 millimetres, or between 6 millimetres and 8 millimetres.

[0279] The aerosol-generating substrate may have an external diameter of between 7 millimetres and 12 millimetres, between 7 millimetres and 10 millimetres, or between 7 millimetres and 8 millimetres.

[0280] For example, the aerosol-generating substrate may have an external diameter of 7 millimetres or 7.1 millimetres.

[0281] The aerosol-generating substrate may have a density of at least 100 milligrams per cubic centimetre, at least 150 milligrams per cubic centimetre, at least 200 milligrams per cubic centimetre at least 250 milligrams per cubic centimetre, or at least 275 milligrams per cubic centimetre.

[0282] The aerosol-generating substrate may have a density of less than or equal to 700 milligrams per cubic centimetre, less than or equal to 650 milligrams per cubic centimetre, less than or equal to 600 milligrams per cubic centimetre, less than or equal to 550 milligrams per cubic centimetre, or less than or equal to 500 milligrams per cubic centimetre.

[0283] The aerosol-generating substrate may have a density of between 100 milligrams per cubic centimetre and 700 milligrams per cubic centimetre, between 100

milligrams per cubic centimetre and 650 milligrams per cubic centimetre, between 100 milligrams per cubic centimetre and 600 milligrams per cubic centimetre, between 100 milligrams per cubic centimetre and 550 milligrams per cubic centimetre, or between 100 milligrams per cubic centimetre and 500 milligrams per cubic centimetre.

[0284] The aerosol-generating substrate may have a density of between 150 milligrams per cubic centimetre and 700 milligrams per cubic centimetre, between 150 milligrams per cubic centimetre and 650 milligrams per cubic centimetre, between 150 milligrams per cubic centimetre and 600 milligrams per cubic centimetre, between 150 milligrams per cubic centimetre and 550 milligrams per cubic centimetre, or between 150 milligrams per cubic centimetre and 500 milligrams per cubic centimetre.

[0285] The aerosol-generating substrate may have a density of between 200 milligrams per cubic centimetre and 700 milligrams per cubic centimetre, between 200 milligrams per cubic centimetre and 650 milligrams per cubic centimetre, between 200 milligrams per cubic centimetre and 600 milligrams per cubic centimetre, between 200 milligrams per cubic centimetre and 550 milligrams per cubic centimetre, or between 200 milligrams per cubic centimetre and 500 milligrams per cubic centimetre.

[0286] The aerosol-generating substrate may have a density of between 250 milligrams per cubic centimetre and 700 milligrams per cubic centimetre, between 250 milligrams per cubic centimetre and 650 milligrams per cubic centimetre, between 250 milligrams per cubic centimetre and 600 milligrams per cubic centimetre, between 250 milligrams per cubic centimetre and 550 milligrams per cubic centimetre, or between 250 milligrams per cubic centimetre and 500 milligrams per cubic centimetre.

[0287] The aerosol-generating substrate may have a density of between 275 milligrams per cubic centimetre and 700 milligrams per cubic centimetre, between 275 milligrams per cubic centimetre and 650 milligrams per cubic centimetre, between 275 milligrams per cubic centimetre and 600 milligrams per cubic centimetre, between 275 milligrams per cubic centimetre and 550 milligrams per cubic centimetre, or between 275 milligrams per cubic centimetre and 500 milligrams per cubic centimetre.

[0288] The aerosol-generating substrate may have a mass of at least 100 milligrams, at least 120 milligrams, at least 130 milligrams, at least 140 milligrams, at least 150 milligrams, or at least 160 milligrams.

[0289] The aerosol-generating substrate may have a mass of less than or equal to 340 milligrams, less than or equal to 310 milligrams, less than or equal to 280 milligrams, less than or equal to 250 milligrams, or less than or equal to 220 milligrams.

[0290] The aerosol-generating substrate may have a mass of between 100 milligrams and 340 milligrams,

between 100 milligrams and 310 milligrams, between 100 milligrams and 280 milligrams, between 100 milligrams and 250 milligrams, or between 100 milligrams and 220 milligrams.

[0291] The aerosol-generating substrate may have a mass of between 120 milligrams and 340 milligrams, between 120 milligrams and 310 milligrams, between 120 milligrams and 280 milligrams, between 120 milligrams and 250 milligrams, or between 120 milligrams and 220 milligrams.

[0292] The aerosol-generating substrate may have a mass of between 130 milligrams and 340 milligrams, between 130 milligrams and 310 milligrams, between 130 milligrams and 280 milligrams, between 130 milligrams and 250 milligrams, or between 130 milligrams and 220 milligrams.

[0293] The aerosol-generating substrate may have a mass of between 140 milligrams and 340 milligrams, between 140 milligrams and 310 milligrams, between 140 milligrams and 280 milligrams, between 140 milligrams and 250 milligrams, or between 140 milligrams and 220 milligrams.

[0294] The aerosol-generating substrate may have a mass of between 150 milligrams and 340 milligrams, between 150 milligrams and 310 milligrams, between 150 milligrams and 280 milligrams, between 150 milligrams and 250 milligrams, or between 150 milligrams and 220 milligrams.

[0295] The aerosol-generating substrate may have a mass of between 160 milligrams and 340 milligrams, between 160 milligrams and 310 milligrams, between 160 milligrams and 280 milligrams, between 160 milligrams and 250 milligrams, or between 160 milligrams and 220 milligrams.

[0296] The aerosol-generating substrate may be circumscribed by wrapper. The aerosol-generating substrate may be circumscribed by a paper wrapper. For example, the aerosol-generating substrate may be circumscribed by a plug wrap.

[0297] The aerosol-generating substrate may comprise an aerosol-generating material.

[0298] The aerosol-generating substrate may comprise a plurality of strands of aerosol-generating material. The plurality of strands of aerosol-generating material may be randomly oriented within the aerosol-generating substrate. In use, this may help to retain generated aerosol within the aerosol-generating substrate between puffs.

[0299] The aerosol-generating material may be a plant material.

[0300] The aerosol-generating material may be a non-tobacco plant material. Examples of suitable non-tobacco plant materials include cannabis material, ginger material, eucalyptus material, clove material and star anise material.

[0301] The aerosol-generating material may be a tobacco material.

[0302] The aerosol-generating material may be tobacco cut filler.

co cut filler.

[0303] The aerosol-generating material may be a homogenised plant material.

[0304] Strands of homogenised plant material may be formed by cutting or shredding a sheet of homogenised plant material. Strands of homogenised plant material may be formed by other methods. For example, strands of homogenised plant material may be formed by extrusion. The aerosol-generating material may be a homogenised non-tobacco plant material. The aerosol-generating material may be a homogenised tobacco material.

[0305] The aerosol-generating material may be a gel material.

[0306] Strands of gel material may be formed by cutting or shredding a sheet of gel material. Strands of gel material may be formed by other methods. For example, strands of gel material may be formed by extrusion.

[0307] The aerosol-generating material may comprise an aerosol former.

[0308] The aerosol former may be any suitable known compound or mixture of compounds that, in use, facilitates formation of a dense and stable aerosol. The aerosol former may be substantially resistant to thermal degradation at temperatures typically reached during use of the aerosol-generating article.

[0309] Examples of suitable aerosol formers include: polyhydric alcohols such as, for example, triethylene glycol, 1,3-butanediol, propylene glycol and glycerine; esters of polyhydric alcohols such as, for example, glycerol mono-, di- or triacetate; aliphatic esters of mono-, di- or polycarboxylic acids such as, for example, dimethyl dodecanedioate and dimethyl tetradecanedioate; and combinations thereof.

[0310] The aerosol former may comprise one or more of glycerine and propylene glycol. The aerosol former may consist of glycerine. The aerosol former may consist of propylene glycol. The aerosol former may consist of a combination of glycerine and propylene glycol.

[0311] The aerosol-generating material may comprise at least 1 percent by weight of aerosol former, at least 5 percent by weight of aerosol former, at least 10 percent by weight of aerosol former, or at least 15 percent by weight of aerosol former. That is, the aerosol-generating material may have an aerosol former content of at least 1 percent by weight, at least 5 percent by weight, at least 10 percent by weight, or at least 15 percent by weight.

[0312] The aerosol-generating material may comprise less than or equal to 30 percent by weight of aerosol former, less than or equal to 25 percent by weight of aerosol former, or less than or equal to 20 percent by weight of aerosol former. That is, the aerosol-generating material may have an aerosol former content of less than or equal to 30 percent by weight, less than or equal to 25 percent by weight, or less than or equal to 20 percent by weight.

[0313] The aerosol-generating material may comprise between 1 percent and 30 percent by weight of aerosol former, between 1 percent and 25 percent by weight of

aerosol former, or between 1 percent and 20 percent by weight of aerosol former.

[0314] The aerosol-generating material may comprise between 5 percent and 30 percent by weight of aerosol former, between 5 percent and 25 percent by weight of aerosol former, or between 5 percent and 20 percent by weight of aerosol former.

[0315] The aerosol-generating material may comprise between 10 percent and 30 percent by weight of aerosol former, between 10 percent and 25 percent by weight of aerosol former, or between 10 percent and 20 percent by weight of aerosol former.

[0316] The aerosol-generating material may comprise between 15 percent and 30 percent by weight of aerosol former, between 15 percent and 25 percent by weight of aerosol former, or between 15 percent and 20 percent by weight of aerosol former.

[0317] The aerosol-generating material may comprise at least 50 percent by weight of aerosol former, at least 60 percent by weight of aerosol former, or at least 70 percent by weight of aerosol former.

[0318] The aerosol-generating material may comprise less than or equal to 85 percent by weight of aerosol former, less than or equal to 80 percent by weight of aerosol former, or less than or equal to 75 percent by weight of aerosol former.

[0319] The aerosol-generating material may comprise between 50 percent and 85 percent by weight of aerosol former, between 50 percent and 80 percent by weight of aerosol former, or between 50 percent and 75 percent by weight of aerosol former.

[0320] The aerosol-generating material may comprise between 60 percent and 85 percent by weight of aerosol former, between 60 percent and 80 percent by weight of aerosol former, or between 60 percent and 75 percent by weight of aerosol former.

[0321] The aerosol-generating material may comprise between 70 percent and 85 percent by weight of aerosol former, between 70 percent and 80 percent by weight of aerosol former, or between 70 percent and 75 percent by weight of aerosol former.

[0322] The aerosol-generating material may comprise nicotine.

[0323] The aerosol-generating material may comprise natural nicotine, or synthetic nicotine, or a combination of natural nicotine and synthetic nicotine.

[0324] The aerosol-generating material may comprise at least 0.5 percent by weight of nicotine, at least 1 percent by weight of nicotine, at least 1.5 percent by weight of nicotine, or at least 2 percent by weight of nicotine. That is, the aerosol-generating material may have a nicotine content of at least 0.5 percent by weight, at least 1 percent by weight, at least 1.5 percent by weight, or at least 2 percent by weight.

[0325] The aerosol-generating material may comprise less than or equal to 10 percent by weight of nicotine, less than or equal to 8 percent by weight of nicotine, less than or equal to 6 percent by weight of nicotine, or less than or

equal to 4 percent by weight of nicotine. That is, the aerosol-generating material may have a nicotine content of less than or equal to 10 percent by weight, less than or equal to 8 percent by weight, less than or equal to 6 percent by weight, or less than or equal to 4 percent by weight.

[0326] The aerosol-generating material may comprise between 0.5 percent and 10 percent by weight of nicotine, between 0.5 percent and 8 percent by weight of nicotine, between 0.5 percent and 6 percent by weight of nicotine, or between 0.5 percent and 4 percent by weight of nicotine.

[0327] The aerosol-generating material may comprise between 1 percent and 10 percent by weight of nicotine, between 1 percent and 8 percent by weight of nicotine, between 1 percent and 6 percent by weight of nicotine, or between 1 percent and 4 percent by weight of nicotine.

[0328] The aerosol-generating material may comprise between 1.5 percent and 10 percent by weight of nicotine, between 1.5 percent and 8 percent by weight of nicotine, between 1.5 percent and 6 percent by weight of nicotine, or between 1.5 percent and 4 percent by weight of nicotine.

[0329] The aerosol-generating material may comprise between 2 percent and 10 percent by weight of nicotine, between 2 percent and 8 percent by weight of nicotine, between 2 percent and 6 percent by weight of nicotine, or between 2 percent and 4 percent by weight of nicotine.

[0330] The aerosol-generating article may comprise an internal heating element located within the aerosol-generating substrate.

[0331] The aerosol-generating device of the aerosol-generating system may comprise an internal heating element for insertion into the aerosol-generating substrate of the aerosol-generating article.

[0332] The internal heating element may be in contact with the aerosol-generating material. The internal heating element may be in contact with the plurality of strands of aerosol-generating material. The internal heating element may be in thermal contact with the aerosol-generating material. The internal heating element may be in thermal contact with the plurality of strands of aerosol-generating material. In use, heat from the internal heating element may be conveyed to the plurality of strands of aerosol-generating material. The internal heating element may advantageously be in direct contact with the aerosol-generating material.

[0333] The internal heating element may have a length of at least 4 millimetres, at least 6 millimetres, at least 8 millimetres, or at least 10 millimetres.

[0334] The internal heating element may have a length of less than or equal to 45 millimetres, less than or equal to 35 millimetres, less than or equal to 25 millimetres, or less than or equal to 15 millimetres.

[0335] For example, the internal heating element may have a length of between 4 millimetres and 45 millimetres, between 4 millimetres and 35 millimetres, between 4 millimetres and 25 millimetres, or between 4

millimetres and 15 millimetres.

[0336] The internal heating element may have a width of at least 0.5 millimetres, at least 1 millimetre, at least 1.5 millimetres, at least 2 millimetres, or at least 2.5 millimetres.

[0337] The internal heating element may have a width of less than or equal to 8 millimetres, less than or equal to 7 millimetres, less than or equal to 6 millimetres, less than or equal to 5 millimetres, or less than or equal to 4 millimetres.

[0338] For example, the internal heating element may have a width of between 0.5 millimetres and 8 millimetres, between 0.5 millimetres and 7 millimetres, between 0.5 millimetres and 6 millimetres, between 0.5 millimetres and 5 millimetres, or between 0.5 millimetres and 4 millimetres.

[0339] The internal heating element may be elongate.

[0340] The internal heating element may be substantially cylindrical.

[0341] The internal heating element may have a thickness substantially the same as the width thereof.

[0342] The internal heating element may have a substantially circular cross-section.

[0343] The internal heating element may have the form of a needle or a pin.

[0344] The internal heating element may have a diameter of at least 0.5 millimetres, at least 1 millimetre, at least 1.5 millimetres, at least 2 millimetres, or at least 2.5 millimetres.

[0345] The internal heating element may have a diameter of less than or equal to 5 millimetres, less than or equal to 4.5 millimetres, less than or equal to 4 millimetres, less than or equal to 3.5 millimetres, or less than or equal to 3 millimetres.

[0346] For example, the internal heating element may have a diameter of between 0.5 millimetres and 5 millimetres, between 0.5 millimetres and 4.5 millimetres, between 0.5 millimetres and 4 millimetres, between 0.5 millimetres and 3.5 millimetres, or between 0.5 millimetres and 3 millimetres.

[0347] The internal heating element may have a width greater than the thickness thereof.

[0348] The internal heating element may have a substantially rectangular cross-section.

[0349] The internal heating element may have the form of a blade or a strip.

[0350] The internal heating element may have a substantially constant cross-section along the length of the internal heating element.

[0351] The internal heating element may have a thickness of at least 0.01 millimetres, at least 0.02 millimetres, at least 0.03 millimetres, or at least 0.05 millimetres.

[0352] The internal heating element may have a thickness of less than or equal to 2 millimetres, less than or equal to 1 millimetre, less than or equal to 0.5 millimetres, or less than or equal to 0.1 millimetres.

[0353] For example, the internal heating element may have a thickness of between 0.01 millimetres and 2

millimetres, between 0.01 millimetres and 1 millimetre, between 0.01 millimetres and 0.5 millimetres, or between 0.01 millimetres and 0.1 millimetres.

[0354] For example, the internal heating element may have a thickness of 60 micrometres.

[0355] As described herein, the internal heating element of the article may be located within the aerosol-generating substrate. The internal heating element may be arranged substantially longitudinally within the aerosol-generating substrate. That is, a longitudinal axis of the internal heating element may be approximately parallel to a longitudinal axis of the aerosol-generating substrate. For example, a longitudinal axis of the internal heating element may be within plus or minus 10 degrees of parallel to a longitudinal axis of the aerosol-generating substrate.

[0356] The internal heating element may be arranged centrally within the aerosol-generating substrate. The internal heating element may extend along a longitudinal axis of the aerosol-generating substrate.

[0357] The internal heating element may extend from a downstream end of the aerosol-generating substrate towards an upstream end of the aerosol-generating substrate.

[0358] The internal heating element may extend from an upstream end of the aerosol-generating substrate towards a downstream end of the aerosol-generating substrate.

[0359] The internal heating element may extend from an upstream end of the aerosol-generating substrate to a downstream end of the aerosol-generating substrate. That is, the internal heating element may extend along the entire length of the aerosol-generating substrate.

[0360] The length of the internal heating element may be substantially the same as the length of the aerosol-generating substrate.

[0361] The internal heating element may extend part way along the length of the aerosol-generating substrate.

[0362] The internal heating element may be spaced apart from a downstream end of the aerosol-generating substrate.

[0363] The internal heating element may be spaced apart from an upstream end of the aerosol-generating substrate.

[0364] The internal heating element may be spaced apart from both a downstream end and an upstream end of the aerosol-generating substrate.

[0365] The length of the internal heating element may be less than the length of the aerosol-generating substrate.

[0366] The internal heating element may be entirely enclosed within the aerosol-generating substrate. That is, the aerosol-generating substrate or the aerosol-generating material may completely surround the internal heating element.

[0367] The internal heating element may be a susceptor element.

[0368] The susceptor element may comprise any sus-

ceptor material that can be inductively heated to a temperature sufficient to generate an aerosol from the aerosol-generating substrate. For example, the susceptor element may comprise a metal, an alloy, or carbon.

[0369] The susceptor element may comprise a ferromagnetic material. For example, the susceptor element may comprise a ferromagnetic alloy, ferritic iron, or a ferromagnetic steel or stainless steel. The susceptor element may comprise aluminium. The susceptor element may comprise 400 series stainless steels. For example, the susceptor element may comprise grade 410, or grade 420, or grade 430 stainless steel. Different susceptor materials will dissipate different amounts of energy when positioned within electromagnetic fields having similar values of frequency and field strength.

[0370] Thus, parameters of the susceptor element such as susceptor material type, length, width, and thickness may all be altered to provide a desired power dissipation within a known electromagnetic field. The susceptor element may be heated to a temperature in excess of 250 degrees Celsius.

[0371] The susceptor element may comprise a non-metallic core with a metal layer disposed on the non-metallic core. For example, the susceptor element may comprise metallic tracks formed on a surface of a ceramic core.

[0372] The susceptor element may comprise a protective outer layer. For example, the susceptor element may comprise a protective outer ceramic layer, a protective outer glass layer, or a protective outer inert metal layer.

[0373] The susceptor element may comprise a protective coating. For example, the susceptor element may comprise a protective coating formed by a glass, a ceramic, or an inert metal.

[0374] The susceptor element may be a multi-material susceptor element. For example, the susceptor element may comprise a first susceptor material and a second susceptor material.

[0375] The internal heating element may be a resistive heating element.

[0376] An aerosol-generating article according to the present disclosure may comprise an upstream section located upstream of the aerosol-generating substrate. The upstream section may be adjacent to the aerosol-generating substrate. The upstream section may be adjacent to the upstream end of the aerosol-generating substrate. The upstream section may be located immediately upstream of the aerosol-generating substrate. The upstream section may abut the aerosol-generating substrate. The upstream section may abut the upstream end of the aerosol-generating substrate. The downstream end of the upstream section may abut the aerosol-generating substrate. The upstream end of the aerosol-generating article may be defined by the upstream end of the upstream section. The upstream section may extend from the upstream end of the aerosol-

generating article to the upstream end of the aerosol-generating substrate.

[0377] The upstream section may comprise one or more upstream elements. The upstream section, and an upstream element thereof, advantageously prevents direct physical contact with the upstream end of the aerosol-generating substrate of the aerosol-generating substrate.

[0378] The upstream element may be an air channelling element in accordance with the present disclosure. Such an air channelling element may have any of the features, characteristics, or properties associated with the air channelling element described in the present disclosure.

[0379] For example, where the aerosol-generating article comprises a susceptor element located within the aerosol-generating substrate, as described herein, the upstream element may prevent direct physical contact with the upstream end of the susceptor element. This helps to prevent the displacement or deformation of the susceptor element during handling or transport of the aerosol-generating article. This in turn helps to secure the form and position of the susceptor element. Furthermore, the presence of an upstream element helps to prevent any loss of the substrate, which may be advantageous, for example, if the substrate contains particulate plant material.

[0380] Where the aerosol-generating substrate comprises a plurality of strands or shredded tobacco, such as tobacco cut filler, the upstream section and elements thereof may additionally help to prevent the loss of loose particles of tobacco from the upstream end of the article. This may be particularly important when the bulk density of the aerosol-generating substrate is relatively low, for example.

[0381] The upstream section, or upstream element thereof, may also additionally provide a degree of protection to the aerosol-generating substrate during storage, as the presence of an upstream section offsets the aerosol-generating substrate away from the upstream end of the article and also covers at least to some extent the upstream end of the aerosol-generating substrate, which may otherwise be exposed.

[0382] For aerosol-generating articles that are intended to be inserted into a cavity in an aerosol-generating device such that the aerosol-generating substrate can be externally heated within the cavity, the upstream section may advantageously facilitate the insertion of the upstream end of the article into the cavity. The inclusion of the upstream element may additionally protect the end of the aerosol-generating substrate during the insertion of the article into the cavity such that the risk of damage to the substrate is minimised.

[0383] The upstream section, or upstream element thereof, may also provide an improved appearance to the upstream end of the aerosol-generating article. Furthermore, if desired, the upstream section may be used to provide information on the aerosol-generating

article, such as information on brand, flavour, content, or details of the aerosol-generating device that the article is intended to be used with.

[0384] An upstream element may comprise or be a plug element. An upstream element may comprise or be a porous plug element. An upstream element may be formed of a solid cylindrical plug element having a filled cross-section. Such a plug element may be referred to as a 'plain' element. The solid plug element may be porous, as described above, but does not have a tubular form and therefore does not provide a longitudinal flow channel. The solid plug element may have a substantially uniform transverse cross section.

[0385] An upstream element may be made of a porous material or may comprise a plurality of openings. This may, for example, be achieved through laser perforation. The plurality of openings may be distributed homogeneously over the cross-section of the upstream element.

[0386] The porosity or permeability of an upstream element may advantageously be designed in order to provide an aerosol-generating article with a particular overall resistance to draw (RTD) without substantially impacting the filtration provided by other portions of the article.

[0387] It may be desirable to minimise the RTD of an upstream element. For example, this may be the case for articles that are intended to be inserted the cavity of an aerosol-generating device such that the aerosol-generating substrate is externally heated. It may be desirable to provide the article with as low an RTD as possible, so that the majority of the RTD experience by the user is provided by the aerosol-generating device and not the article.

[0388] The RTD of an upstream element may be less than or equal to 30 millimetres H₂O. The RTD of an upstream element may be less than or equal to 20 millimetres H₂O. The RTD of an upstream element may be less than or equal to 10 millimetres H₂O. The RTD of the upstream element may be less than or equal to 5 millimetres H₂O. The RTD of the upstream element may be less than or equal to 2 millimetres H₂O.

[0389] The RTD of an upstream element may be at least 0 millimetres H₂O, or at least 0.1 millimetres H₂O, or at least 0.25 millimetres H₂O, or at least 0.5 millimetres H₂O.

[0390] An upstream element may be formed of a hollow tubular element defining a longitudinal cavity providing an unrestricted flow channel. Such an upstream element can provide protection for the aerosol-generating substrate, as described above, whilst having a minimal effect on the overall resistance to draw (RTD) and filtration properties of the article.

[0391] An upstream element of the upstream section may be made of any material suitable for use in an aerosol-generating article. The upstream element may, for example, be made of a same material as used for one of the other components of the aerosol-generating article, such as a downstream filter element or a downstream hollow tubular element. Suitable materials for forming the

upstream element of the present disclosure include filter materials, ceramic, polymer material, cellulose acetate, cardboard, zeolite or aerosol-generating substrate. The upstream element may comprise a plug of cellulose acetate. The upstream element may comprise a hollow acetate tube, or a cardboard tube.

[0392] The upstream section, or an upstream element thereof, may have an external diameter that is approximately equal to the external diameter of the aerosol-generating article.

[0393] The upstream section or an upstream element may have a length of between 2 millimetres and 10 millimetres, or between 3 millimetres and 8 millimetres, or between 2 millimetres and 6 millimetres. The upstream section or an upstream element may have a length of 5 millimetres.

[0394] The length of the upstream section or an upstream element can advantageously be varied in order to provide the desired total length of the aerosol-generating article. For example, where it is desired to reduce the length of one of the other components of the aerosol-generating article, the length of the upstream section or an upstream element may be increased in order to maintain the same overall length of the article.

[0395] In addition, the length of the upstream section, or an upstream element thereof, can be used to control the position of the aerosol-generating article within the cavity of an aerosol-generating device, for articles which are intended to be externally heated. This can advantageously ensure that the position of the aerosol-generating substrate within the cavity can be optimised for heating and the position of any ventilation can also be optimised.

[0396] The upstream section may be circumscribed by a wrapper. The wrapper may be a plug wrap.

[0397] The upstream section may be connected to the aerosol-generating substrate by means of an outer wrapper. The upstream section may also be connected to at least a part of the downstream section by means of an outer wrapper, either the same outer wrapper connecting the upstream section to the aerosol-generating substrate or a different one.

[0398] An aerosol-generating article according to the present disclosure comprises a downstream section located downstream of the aerosol-generating substrate. The downstream section may be adjacent to the aerosol-generating substrate. The downstream section may be adjacent to the downstream end of the aerosol-generating substrate. The downstream section may be located immediately downstream of the aerosol-generating substrate. The downstream section may abut the aerosol-generating substrate. The downstream section may abut the downstream end of the aerosol-generating substrate. The upstream end of the downstream section may abut the aerosol-generating substrate. The downstream section of the aerosol-generating article may extend between the aerosol-generating substrate and the downstream end of the aerosol-generating article. The down-

stream end of the aerosol-generating article may be defined by the downstream end of the downstream section. The downstream end of the aerosol-generating article may coincide with the downstream end of the downstream section. The downstream section may extend from the downstream end of the aerosol-generating substrate to the downstream end of the aerosol-generating article.

[0399] The downstream section may comprise one or more elements, each of which are described in more detail within the present disclosure. The upstream end of an element of the downstream section may abut the aerosol-generating substrate. The downstream end of an element of the downstream section may define the downstream end of the aerosol-generating article.

[0400] The length of the downstream section may be at least 20 millimetres. The length of the downstream section may be at least 25 millimetres. The length of the downstream section may be at least 30 millimetres.

[0401] The length of the downstream section may be less than or equal to 45 millimetres. The length of the downstream section may be equal to or less than 40 millimetres. The length of the downstream section may be equal to or less than 35 millimetres.

[0402] The length of the downstream section may be between 20 millimetres and 45 millimetres, or between 25 millimetres and 45 millimetres, or between 30 millimetres and 45 millimetres. The length of the downstream section may be between 20 millimetres and 40 millimetres, or between 25 millimetres and 40 millimetres, or between 30 millimetres and 40 millimetres. The length of the downstream section may be between 20 millimetres and 35 millimetres, or between 25 millimetres and 35 millimetres, or between 30 millimetres and 35 millimetres.

[0403] Providing a relatively long downstream section, may ensure that a suitable length of the aerosol-generating article protrudes from an aerosol-generating device when the article is received therein. Such a suitable protrusion length facilitates the ease of insertion and extraction of the article from the device, which also ensures that the upstream portions of the article are suitably inserted into the device with reduced risk of damage, particularly during insertion.

[0404] The downstream section of an aerosol-generating article may comprise a cooling element provided downstream of the aerosol-generating substrate. The cooling element may be provided immediately downstream of the aerosol-generating substrate. In other words, the cooling element may abut a downstream end of the aerosol-generating substrate. The cooling element may define an upstream end of the downstream section of the aerosol-generating article. The cooling element may also define a downstream end of the downstream section of the aerosol-generating article. The cooling element may also extend to the downstream end of the aerosol-generating article. The downstream section of the aerosol-generating article may comprise a

single cooling element. In other words, the downstream section of the aerosol-generating article may comprise only one cooling element.

[0405] The air channelling element as described in the present disclosure is a cooling element provided downstream of the aerosol-generating substrate.

[0406] The downstream section may comprise a filter element. A filter element may be referred to as a mouthpiece element. The filter element may extend to a downstream end of the downstream section. The filter element may extend to the downstream end of the aerosol-generating article. The filter element may extend from the downstream end of the aerosol-generating article. The filter element may be located at the downstream end of the aerosol-generating article. The downstream end of the filter element may define the downstream end of the aerosol-generating article.

[0407] The filter element may be located downstream of a cooling element of the downstream section. The filter element may extend between the cooling element and the downstream end of the aerosol-generating article. The filter element may abut the cooling element of the downstream section. The upstream end of the filter element may abut the downstream end of the cooling element of the downstream section.

[0408] For example, the aerosol-generating article may comprise the air channelling element downstream of the aerosol-generating substrate and a filter element downstream of the air channelling element.

[0409] The filter element may be in the form of a plug element or a solid plug. Such a filter element may be referred to as a filter plug. The filter element may be a porous plug element. The filter element may be formed of a solid cylindrical plug element having a filled cross-section. The solid cylindrical filter plug element may be porous, as described above, but does not have a tubular form and therefore does not provide a longitudinal flow channel. The solid filter plug element may have a substantially uniform transverse cross section.

[0410] The aerosol-generating article or downstream section may not comprise a cavity or recess defined at the mouth or downstream end of the article. The aerosol-generating article or downstream section may not comprise a cavity or recess extending from the filter element to the mouth or downstream end of the article. For example, the aerosol-generating article may comprise a filter plug at the downstream end of the aerosol-generating article. The filter plug may extend from the downstream end of the aerosol-generating article towards the upstream end of the aerosol-generating article. This may help to achieve a desired temperature profile of aerosol across the aerosol-generating article at the mouth end of the aerosol-generating article.

[0411] The filter element may be formed of a fibrous filtration material. The fibrous filtration material may be for filtering the aerosol that is generated from the aerosol-generating substrate. Suitable fibrous filtration materials are known to the skilled person. The filter element may

comprise cellulose acetate. The filter element may comprise cellulose acetate tow. The filter element may be formed of cellulose acetate tow.

[0412] The filter element may comprise a flavourant, which may be provided in any suitable form. For example, the filter element may comprise one or more capsules, beads or granules of a flavourant, or one or more flavour loaded threads or filaments.

[0413] The filter element may have a low particulate filtration efficiency.

[0414] The filter element may be circumscribed by a plug wrap. The filter element may be unventilated such that air does not enter the aerosol-generating article along the filter element.

[0415] The filter element may be connected to one or more of the adjacent upstream components of the aerosol-generating article by means of a tipping wrapper.

[0416] The filter element may have an external diameter that may be approximately equal to the external diameter of the aerosol-generating article. The diameter of a filter element may be substantially the same as the outer or external diameter of a cooling element. The diameter of a filter element may be substantially the same as the outer or external diameter of the air channelling element.

[0417] The diameter of the filter element may be between 5 millimetres and 10 millimetres. The diameter of the filter element may be between 6 millimetres and 8 millimetres.

[0418] The length of the filter element may be at least 5 millimetres. The length of the filter element may be at least 6 millimetres. The length of the filter element may be less than or equal to 12 millimetres. The length of the filter element may be less than or equal to 10 millimetres.

[0419] For example, the length of the filter element may be between 5 millimetres and 10 millimetres, or between 6 millimetres and 12 millimetres, or between 5 millimetres and 10 millimetres, or between 6 millimetres and 12 millimetres.

[0420] An aerosol-generating article in accordance with the present disclosure may comprise an aerosol-generating substrate, an upstream section located upstream of the aerosol-generating substrate, and a downstream section located downstream of the aerosol-generating substrate. The upstream section may comprise an upstream element, in accordance with the present disclosure. The downstream section may comprise an aerosol cooling element and a filter or mouthpiece element, both in accordance with the present disclosure. The cooling element may be located between the aerosol-generating substrate and the filter element. The cooling element may be an air channelling element in accordance with the present disclosure.

[0421] All components of an aerosol-generating article in accordance with the present disclosure may be assembled in an axial, sequential, and abutting manner within one or more wrapping materials of the aerosol-generating article. Each component of an aerosol-gen-

erating article may also be wrapped individually, for example, by a corresponding plug wrap.

[0422] An aerosol-generating article may have a total length of at least 38 millimetres, at least 40 millimetres, or at least 42 millimetres.

[0423] An aerosol-generating article may have a total length of less than or equal to 70 millimetres, less than or equal to 60 millimetres, or less than or equal to 50 millimetres.

[0424] For example, an aerosol-generating article may have a total length of between 38 millimetres and 70 millimetres, between 38 millimetres and 60 millimetres, or between 38 millimetres and 50 millimetres.

[0425] For example, the aerosol-generating article may have a total length of 45 millimetres.

[0426] The aerosol-generating article may be substantially cylindrical. The aerosol-generating article may have a substantially circular cross-section.

[0427] The aerosol-generating article may have an external diameter of at least 5 millimetres, at least 6 millimetres, or at least 7 millimetres.

[0428] The aerosol-generating article may have an external diameter of less than or equal to 12 millimetres, less than or equal to 10 millimetres, or less than or equal to 8 millimetres.

[0429] The aerosol-generating article may have an external diameter of between 5 millimetres and 12 millimetres, between 5 millimetres and 10 millimetres, or between 5 millimetres and 8 millimetres. For example, the aerosol-generating article may have an external diameter of 7.1 millimetres or 7.2 millimetres.

[0430] The present disclosure relates to an aerosol-generating system comprising an aerosol-generating article described herein and an aerosol-generating device configured to heat the aerosol-generating substrate of the aerosol-generating article. In other words, the aerosol-generating system may comprise a consumable aerosol-generating article and a reusable aerosol-generating device.

[0431] The aerosol-generating device may be a hand-held aerosol-generating device. The aerosol-generating device may be an electrically-operated aerosol-generating device.

[0432] The aerosol-generating device may have a distal end and a mouth end. The aerosol-generating device may comprise a housing. The housing of the aerosol-generating device may define a device cavity (or heating chamber) for removably receiving the aerosol-generating article at the mouth end of the device. The aerosol-generating device may comprise a heating element or heater for heating the aerosol-generating substrate when the aerosol-generating article is received within the device cavity.

[0433] The device cavity may also be referred to as the heating chamber of the aerosol-generating device. The device cavity may extend between a distal end and a mouth, or proximal, end. The distal end of the device cavity may be a closed end and the mouth, or proximal,

end of the device cavity may be an open end. An aerosol-generating article may be inserted into the device cavity, or heating chamber, via the open end of the device cavity. The device cavity may be configured to receive at least a portion of the aerosol-generating article. The device cavity may be configured to receive at least the aerosol-generating substrate of the aerosol-generating article. The device cavity may be substantially cylindrical. The device cavity may have a substantially circular cross-section. The device cavity may be cylindrical in shape so as to conform to the same shape of an aerosol-generating article.

[0434] The aerosol-generating device may comprise a heating element.

[0435] The aerosol-generating device may comprise an external heating element. The heating element may externally heat the aerosol-generating article when received within the aerosol-generating device. Such an external heater may circumscribe the aerosol-generating article when inserted in or received within the aerosol-generating device. The heater may be arranged to heat the outer surface of the aerosol-generating substrate. The external heating element may be located around a perimeter of the device cavity. The external heating element may be a resistive heating element. The external heating element may be a susceptor element (or inductive heating element).

[0436] As mentioned in the present disclosure, the aerosol-generating article may comprise an internal heating element located within the aerosol-generating substrate.

[0437] As mentioned in the present disclosure, the aerosol-generating device may comprise an internal heating element for insertion into the aerosol-generating substrate of the aerosol-generating article. The internal heating element of the aerosol-generating device may be positioned within the device cavity or heating chamber. The internal heating element may be arranged substantially longitudinally within the device cavity. That is, a longitudinal axis of the internal heating element may be approximately parallel to a longitudinal axis of the device cavity. The internal heating element may be arranged centrally within the device cavity. The internal heating element may extend along a longitudinal axis of the device cavity. The internal heating element may be elongate. The internal heating element may be substantially cylindrical. The internal heating element may have a thickness substantially the same as the width thereof. The internal heating element may have a substantially circular cross-section. The internal heating element may have the form of a needle or a pin. The internal heating element may have a width greater than the thickness thereof. The internal heating element may have a substantially rectangular cross-section. The internal heating element may have the form of a blade or a strip.

[0438] The internal heating element may be a resistive heating element. The internal heating element may be a susceptor element (or inductive heating element).

[0439] The aerosol-generating device may comprise an induction element. The induction element may comprise one or more induction coils. The induction element may be located around a perimeter of the device cavity.

5 The power supply of the device may be configured to provide high frequency oscillating current to the induction element or inductor coil. The induction element or inductor coil may be arranged to generate a high frequency oscillating electromagnetic field on receiving a high frequency oscillating current from the power supply. The induction element or inductor coil may be arranged to generate a high frequency oscillating electromagnetic field in the device cavity. The inductor coil may substantially circumscribe the device cavity. The induction element or inductor coil may extend at least partially along the length of the device cavity.

10 **[0440]** When a susceptor element, either of the aerosol-generating article or the aerosol-generating device, is located in an alternating electromagnetic field, the susceptor is heated. Heating of the susceptor element may be the result of at least one of hysteresis losses and eddy currents induced in the susceptor, depending on the electrical and magnetic properties of the susceptor material. A susceptor element may be arranged such that, when the aerosol-generating article is received in the device cavity of the aerosol-generating device, the oscillating electromagnetic field generated by the induction element induces a current in the susceptor element, causing the susceptor element (either of the aerosol-generating article or the aerosol-generating device) to heat up.

20 **[0441]** A susceptor element of the present disclosure, either of the aerosol-generating article or the aerosol-generating device, may be formed from any material that can be inductively heated to a temperature sufficient to heat the aerosol-generating substrate such that volatile compounds are released from the substrate. For example, the susceptor element may comprise a metal, an alloy, or carbon.

30 **[0442]** The susceptor element may comprise a ferromagnetic material. For example, the susceptor element may comprise a ferromagnetic alloy, ferritic iron, or a ferromagnetic steel or stainless steel. The susceptor element may comprise aluminium. The susceptor element may comprise 400 series stainless steels. For example, the susceptor element may comprise grade 410, or grade 420, or grade 430 stainless steel. Different susceptor materials will dissipate different amounts of energy when positioned within electromagnetic fields having similar values of frequency and field strength.

40 **[0443]** Thus, parameters of the susceptor element such as susceptor material type, length, width, and thickness may all be altered to provide a desired power dissipation within a known electromagnetic field. The susceptor element may be heated to a temperature in excess of 250 degrees Celsius.

50 **[0444]** The susceptor element may comprise a non-metallic core with a metal layer disposed on the non-

metallic core. For example, the susceptor element may comprise metallic tracks formed on a surface of a ceramic core.

[0445] The susceptor element may comprise a protective outer layer. For example, the susceptor element may comprise a protective outer ceramic layer, a protective outer glass layer, or a protective outer inert metal layer.

[0446] The susceptor element may comprise a protective coating. For example, the susceptor element may comprise a protective coating formed by a glass, a ceramic, or an inert metal.

[0447] The susceptor element may be a multi-material susceptor element. For example, the susceptor element may comprise a first susceptor material and a second susceptor material.

[0448] Where the aerosol-generating article comprises one or more ventilation zones, at least one ventilation zone or all ventilation zones may be arranged to be exposed when the aerosol-generating article is received within the device cavity. Thus, the length of the device cavity or heating chamber may be less than the distance of the upstream end of the aerosol-generating article to a ventilation zone located along the downstream section. In other words, when the aerosol-generating article is received within the aerosol-generating device, the distance between a ventilation zone and the upstream end of the upstream element may be greater than the length of the heating chamber. Such positioning of a ventilation zone ensures the ventilation zone is not occluded within the device cavity itself, while also minimising the risk of occlusion by a user's lips or hands as the ventilation zone is located at the most upstream position from the downstream end of the article as reasonably possible without being occluded within the device cavity.

[0449] Below, there is provided a non-exhaustive list of non-limiting examples. Any one or more of the features of these examples may be combined with any one or more features of another example, embodiment, or aspect described herein.

EX1: An air channelling element or cooling element for an aerosol-generating article, the cooling element comprising: an outer tube; an inner body located within the outer tube; and an inner channel defined within the inner body.

EX2: An air channelling element or cooling element according to EX1 comprising one or more peripheral channels located between the outer tube and the inner body.

EX3: An air channelling element or cooling element according to EX1 or EX2 comprising up to six peripheral channels located between the outer tube and the inner body.

EX4: An air channelling element or cooling element according to any one of EX1 to EX3, wherein the length of the inner body is at least 20 percent of the length of the air channelling element or cooling element.

EX5: An air channelling element or cooling element according to any one of EX1 to EX4, wherein the length of the inner body is less than or equal to 80 percent of the length of the air channelling element or cooling element.

EX6: An air channelling element or cooling element according to any one of EX1 to EX5, wherein the inner body has a length of at least 4 millimetres.

EX7: An air channelling element or cooling element according to any one of EX1 to EX6, wherein the inner body has a length of less than or equal to 18 millimetres.

EX8: An air channelling element or cooling element according to any one of EX1 to EX7, wherein the inner channel extends along substantially the entire length of the inner body.

EX9: An air channelling element or cooling element according to any one of EX1 to EX8, wherein the length of the inner channel is at least 20 percent of the length of the air channelling element or cooling element.

EX10: An air channelling element or cooling element according to any one of EX1 to EX9, wherein the length of the inner channel is less than or equal to 80 percent of the length of the air channelling element or cooling element.

EX11: An air channelling element or cooling element according to any one of EX1 to EX10, wherein the inner channel has a length of at least 4 millimetres.

EX12: An air channelling element or cooling element according to any one of EX1 to EX11, wherein the inner channel has a length of less than or equal to 18 millimetres.

EX13: An air channelling element or cooling element according to any one of EX1 to EX12, wherein the upstream end of the inner body is located away from the upstream end of the air channelling element or cooling element.

EX14: An air channelling element or cooling element according to any one of EX1 to EX13, wherein the upstream end of the inner body is located away from the upstream end of the air channelling element or cooling element by at least 20 percent of the length of the air channelling element or cooling element.

EX15: An air channelling element or cooling element according to any one of EX1 to EX14, wherein the upstream end of the inner body is located away from the upstream end of the air channelling element or cooling element by less than or equal to 80 percent of the length of the air channelling element or cooling element.

EX16: An air channelling element or cooling element according to any one of EX1 to EX15, wherein the upstream end of the inner body is located away from the upstream end of the air channelling element or cooling element by at least 4 millimetres.

EX17: An air channelling element or cooling element according to any one of EX1 to EX16, wherein the

upstream end of the inner body is located away from the upstream end of the air channelling element or cooling element by less than or equal to 18 millimetres.

EX18: An air channelling element or cooling element according to any one of EX1 to EX17, wherein the upstream end of the inner body is located away from the upstream end of the outer tube.

EX19: An air channelling element or cooling element according to any one of EX1 to EX18, wherein the upstream end of the inner body is located away from the upstream end of the outer tube by at least 20 percent of the length of the air channelling element or cooling element.

EX20: An air channelling element or cooling element according to any one of EX1 to EX19, wherein the upstream end of the inner body is located away from the upstream end of the outer tube by less than or equal to 80 percent of the length of the air channelling element or cooling element.

EX21: An air channelling element or cooling element according to any one of EX1 to EX20, wherein the upstream end of the inner body is located away from the upstream end of the outer tube by at least 4 millimetres.

EX22: An air channelling element or cooling element according to any one of EX1 to EX21, wherein the upstream end of the inner body is located away from the upstream end of the outer tube by less than or equal to 18 millimetres.

EX23: An air channelling element or cooling element according to any one of EX1 to EX22 comprising a cavity defined by an internal surface of the outer tube, the cavity extending from the upstream end of the inner body towards the upstream end of the air channelling element or cooling element.

EX24: An air channelling element or cooling element according to any one of EX1 to EX23, wherein the air channelling element or cooling element has a length of at least 8 millimetres. EX25: An air channelling element or cooling element according to any one of EX1 to EX24, wherein the air channelling element or cooling element has a length of less than or equal to 28 millimetres.

EX26: An air channelling element or cooling element according to any one of EX1 to EX25, wherein the outer tube extends along substantially the entire length of the air channelling element or cooling element.

EX27: An air channelling element or cooling element according to any one of EX1 to EX26, wherein the outer tube has a length of at least 8 millimetres.

EX28: An air channelling element or cooling element according to any one of EX1 to EX27, wherein outer tube has a length of less than or equal to 28 millimetres.

EX29: An air channelling element or cooling element according to any one of EX1 to EX28, wherein the

cooling element comprises a single inner channel.

EX30: An air channelling element or cooling element according to any one of EX1 to EX29, wherein the inner channel has a cross-sectional area of at least 15 percent of a cross-sectional area of the air channelling element or cooling element in a same transverse plane.

EX31: An air channelling element or cooling element according to any one of EX1 to EX30, wherein the inner channel has a cross-sectional area of less than or equal to 40 percent of a cross-sectional area of the air channelling element or cooling element in a same transverse plane.

EX32: An air channelling element or cooling element according to any one of EX1 to EX31, wherein the width of the inner channel is at least 30 percent of the width of the air channelling element or cooling element.

EX33: An air channelling element or cooling element according to any one of EX1 to EX32, wherein the width of the inner channel is substantially the same as the width of the air channelling element or cooling element.

EX34: An air channelling element or cooling element according to any one of EX1 to EX32, wherein the width of the inner channel is up to 90 percent of the width of the air channelling element or cooling element.

EX35: An air channelling element or cooling element according to any one of EX1 to EX34, wherein the width of the air channelling element or cooling element is substantially the same as the width of the aerosol-generating article.

EX36: An air channelling element or cooling element according to any one of EX1 to EX35, wherein the width of the outer tube is substantially the same as the width of the air channelling element or cooling element.

EX37: An air channelling element or cooling element according to any one of EX1 to EX36, wherein the inner channel has a substantially circular cross-sectional shape.

EX38: An air channelling element or cooling element according to any one of EX1 to EX37, wherein the inner channel is substantially cylindrical.

EX39: An air channelling element or cooling element according to any one of EX1 to EX38, wherein the central axis of the aerosol-generating article passes through the inner channel. EX40: An air channelling element or cooling element according to any one of EX1 to EX39, wherein the inner body comprises: a central portion defining the inner channel, and at least two extension portions in contact with an internal surface of the outer tube.

EX41: An air channelling element or cooling element according to EX40, wherein the central portion of the inner body has a substantially circular cross-sectional shape.

EX42: An air channelling element or cooling element according to EX40 or EX41, wherein each of the at least two extension portions of the inner body extends from the central portion of the inner body to the outer tube.

EX43: An air channelling element or cooling element according to any one of EX40 to EX42, wherein the at least two extension portions are substantially equally spaced around the central portion.

EX44: An air channelling element or cooling element according to any one of EX40 to EX43, wherein each of the at least two extension portions are substantially planar.

EX45: An air channelling element or cooling element according to any one of EX40 to EX44, wherein both the central portion of the inner body and the at least two extension portions of the inner body define the inner channel.

EX46: An air channelling element or cooling element according to EX45, wherein each of the at least two extension portions comprise two extension walls extending from the central portion of the inner body to the outer tube, wherein a space is defined between the two extension walls.

EX47: An air channelling element or cooling element according to EX46, wherein the two extension walls of each of the at least two extension portions are substantially parallel to one another.

EX48: An air channelling element or cooling element according to EX45 to EX47, wherein a ratio of the thickness of each of the at least two extension portions to the width of the central portion is less than or equal to 0.5.

EX49: An air channelling element or cooling element according to EX45 to EX48, wherein a ratio of the thickness of each of the at least two extension portions to the width of the central portion is at least 0.1.

EX50: An air channelling element or cooling element according to any one of EX40 to EX44, wherein each of the at least two extension portions do not define a part of the inner channel.

EX51: An air channelling element or cooling element according to EX50, wherein each of the at least two extension portions comprise a single wall extending from the central portion of the inner body to the outer tube.

EX52: An air channelling element or cooling element according to any one of EX40 to EX51, wherein the inner body comprises up to six extension portions in contact with an internal surface of the outer tube.

EX53: An air channelling element or cooling element according to any one of EX40 to EX52, wherein each of the at least two extension portions extend the entire length of the inner body.

EX54: An air channelling element or cooling element according to any one of EX1 to EX53, wherein the inner channel has a cross-sectional area of at least 6 square millimetres.

EX55: An air channelling element or cooling element

according to any one of EX1 to EX54, wherein the inner channel has a cross-sectional area of less than or equal to 16 square millimetres.

EX56: An air channelling element or cooling element according to any one of EX1 to EX55, wherein the inner channel has a width of at least 2 millimetres.

EX57: An air channelling element or cooling element according to any one of EX1 to EX56, wherein the inner channel has a width of less than or equal to 7 millimetres.

EX58: An air channelling element or cooling element according to any one of EX1 to EX57, wherein the outer tube is a single tube.

EX59: An air channelling element or cooling element according to any one of EX1 to EX57, wherein the outer tube is formed from two tubular segments in an abutting end-to-end relationship. EX60: An air channelling element or cooling element according to EX59, wherein the outer tube is formed from a first or downstream tubular segment and a second or upstream tubular segment located upstream of the first or downstream tubular segment, and wherein the inner body is located wholly within the first or downstream tubular segment.

EX61: An air channelling element or cooling element according to any one of EX1 to EX60, wherein the inner body comprises an upstream end wall at the upstream end of a central portion of the inner body, wherein the upstream end wall delimits an opening for airflow between the inner channel and the exterior of the inner body.

EX62: An air channelling element or cooling element according to any one of EX1 to EX61, wherein one or both of the inner body and the outer tube is formed from paper sheet.

EX63: An air channelling element or cooling element according to any one of EX1 to EX62, wherein the inner body and the outer tube are integrally formed or separately formed.

EX64: An air channelling element or cooling element according to any one of EX1 to EX63, wherein the outer tube is substantially cylindrical.

EX65: An air channelling element or cooling element according to any one of EX1 to EX64 comprising a porous body surrounding at least a part of the inner body.

EX66: An aerosol-generating article comprising an aerosol-generating substrate and an air channelling element or a cooling element according to any one of EX1 to EX65.

EX67: An aerosol-generating article according to EX66, wherein the air channelling element or cooling element is located downstream of the aerosol-generating substrate.

EX68: An aerosol-generating article according to EX67, wherein the upstream end of the air channelling element or cooling element abuts the downstream end of the aerosol-generating substrate.

EX69: An aerosol-generating article according to EX67 or EX68, wherein the upstream end of the inner body is located away from the downstream end of the aerosol-generating substrate.

EX70: An aerosol-generating article according to any one of EX67 to EX69, wherein the upstream end of the inner body is located away from the downstream end of the aerosol-generating substrate by at least 20 percent of the length of the air channelling element or cooling element.

EX71: An aerosol-generating article according to any one of EX67 to EX69, wherein the upstream end of the inner body is located away from the downstream end of the aerosol-generating substrate by less than or equal to 80 percent of the length of the air channelling element or cooling element.

EX72: An aerosol-generating article according to any one of EX67 to EX70, wherein the upstream end of the inner body is located away from the downstream end of the aerosol-generating substrate by at least 4 millimetres.

EX73: An aerosol-generating article according to any one of EX67 to EX72, wherein the upstream end of the inner body is located away from the downstream end of the aerosol-generating substrate by less than or equal to 18 millimetres.

EX74: An aerosol-generating article according to any one of EX66 to EX73 comprising one or more ventilation zones at a location downstream of the aerosol-generating substrate.

EX75: An aerosol-generating article according to any one of EX67 to EX74 comprising one or more ventilation zones at a location along the outer tube configured to establish fluid communication between the exterior of the aerosol-generating article and the interior of the outer tube.

EX76: An aerosol-generating article according to any one of EX67 to EX75 comprising a ventilation zone at a location along the outer tube and downstream of the upstream end of the inner body.

EX77: An aerosol-generating article according to EX76, wherein the ventilation zone is located less than or equal to 50 percent of the length of the inner body downstream of the upstream end of the inner body.

EX78: An aerosol-generating article according to EX76 or EX77, wherein the ventilation zone is located at least 10 percent of the length of the inner body downstream of the upstream end of the inner body.

EX79: An aerosol-generating article according to any one of EX76 to EX78, wherein the ventilation zone is located less than or equal to 4 millimetres downstream of the upstream end of the inner body.

EX80: An aerosol-generating article according to any one of EX76 to EX78, wherein the ventilation zone is located at least 1 millimetre downstream of the upstream end of the inner body.

EX81: An aerosol-generating article according to any one of EX67 to EX80 comprising a ventilation zone located along the outer tube and upstream of the upstream end of the inner body.

EX82: An aerosol-generating article according to any one of EX75 to EX81 comprising a first ventilation zone located along the outer tube and downstream of the upstream end of the inner body, and a second ventilation zone located along the outer tube and upstream of the upstream end of the inner body.

EX83: An aerosol-generating article according to EX82, wherein the ventilation level of the second ventilation zone is greater than the ventilation level of the first ventilation zone.

EX84: An aerosol-generating article according to EX83, wherein the ventilation level of the second ventilation zone is at least 1.2 times the ventilation level of the first ventilation zone.

EX85: An aerosol-generating article according to EX83 or EX84, wherein the ventilation level of the second ventilation zone is less than or equal to 3 times the ventilation of the first ventilation zone.

EX86: An aerosol-generating article according to any one of EX82 to EX85, wherein the first ventilation zone has a ventilation level of at least 10 percent.

EX87: An aerosol-generating article according to any one of EX82 to EX86, wherein the first ventilation zone has a ventilation level of less than or equal to 25 percent.

EX88: An aerosol-generating article according to any one of EX82 to EX87, wherein the second ventilation zone has a ventilation level of at least 25 percent.

EX89: An aerosol-generating article according to any one of EX82 to EX88, wherein the second ventilation zone has a ventilation level of less than or equal to 40 percent.

EX90: An aerosol-generating article according to any one of EX82 to EX89, wherein the resistance to draw through the first ventilation zone is greater than the resistance to draw through the second ventilation zone.

EX91: An aerosol-generating article according to any one of EX82 to EX90, wherein the first ventilation zone comprises a plurality of apertures and the second ventilation zone comprises a plurality of apertures, the total opening area of the plurality of apertures of the second ventilation zone is greater than the total opening area of the plurality of apertures of the first ventilation zone.

EX92: An aerosol-generating article according to any one of EX82 to EX91, wherein the outer tube of the air channelling element or cooling element is formed of a first tubular segment and a second tubular segment located upstream of the first tubular segment, wherein the first ventilation zone is provided through the first tubular segment, and wherein the second ventilation zone is provided through the

second tubular segment.

EX93: An aerosol-generating article according to any one of EX66 to EX92, wherein the air channelling element or cooling element is configured such that substantially all of the air that enters the inner channel during use of the aerosol-generating article is through the upstream end of the inner channel.

EX94: An aerosol-generating article according to any one of EX66 to EX93 further comprising a filter plug element located at the downstream end of the aerosol-generating article.

[0450] The invention will be further described, by way of example only, with reference to the accompanying figures in which:

Figure 1 shows a schematic side sectional view of an aerosol-generating article in accordance with the present invention;

Figure 2 shows a schematic side sectional view of another aerosol-generating article in accordance with the present invention;

Figure 3a shows a side perspective view of an air channelling element for an aerosol-generating article in accordance with another embodiment of the invention;

Figure 3b shows a schematic cross sectional view of the air channelling element shown in Figure 3a;

Figure 4a shows a side perspective view of an air channelling element for an aerosol-generating article in accordance with another embodiment of the invention; and

Figure 4b shows a schematic cross sectional view of the air channelling element shown in Figure 4a.

[0451] Figures 1 & 2 show aerosol-generating articles 1, 2 in accordance with an embodiment of the invention. The aerosol-generating article 1, 2 is substantially cylindrical and has a total length of 45 millimetres and an external diameter of 7.1 millimetres.

[0452] The aerosol-generating article 1, 2 comprises a rod of aerosol-generating substrate 12, a downstream section 14 and an upstream section 16.

[0453] The downstream section 14 is located downstream of the aerosol-generating substrate 12. The downstream end of the downstream section 14 corresponds to the downstream end of the aerosol-generating article 1, 2. The aerosol-generating substrate 12 has a length of 12 millimetres. The downstream section has a length of 28 millimetres.

[0454] The downstream section 14 comprises an air channelling element 30, 31 and a mouthpiece element 18. The air channelling element 30, 31 is located immediately downstream of the aerosol-generating substrate 12. The upstream end of the air channelling element 30, 31 abuts the downstream end of the aerosol-generating substrate 12. The air channelling element 30, 31 may be referred to as a cooling element 30, 31. The air channel-

ling element has a length of 21 millimetres.

[0455] The outer tube 22 shown in Figure 1 is a single tube. In some other examples, the outer tube 22 may comprise a plurality of tubular segments, such as two tubular segments (an upstream tubular segment and a downstream tubular segment) in an abutting end-to-end longitudinal arrangement. In such examples, the upstream tubular segment may be empty, and the inner body may be located within the downstream tubular segment.

[0456] Different embodiments of the air channelling element are illustrated in Figures 1, 2, 3a, 3b, 4a, and 4b. Characteristics shared by all of such embodiments are described immediately below.

[0457] As shown in Figures 1 & 2, the air channelling element 30, 31 is a hollow tubular element. The air channelling element 30, 31 comprises an outer tube 22, which is a hollow tube, and an inner body 24 located within the outer tube 22. The central axes of both the outer tube 22 and the inner body 24 are aligned. In other words, the central axes of both the outer tube 22 and the inner body 24 are parallel to each other. The inner body 24 is configured to be retained within the outer tube 22 by retention means (not shown in Figure 1).

[0458] The aerosol-generating article 2 shown in Figure 2 differs from the aerosol-generating article 1 shown in Figure 1 in that the air channelling element 31 of the aerosol-generating article 2 comprises retention means in the form of an annular retention element 23. The outer surface of the retention element 23 engages with the internal surface of the outer tube 22 and the internal surface of the retention element 23 engages with the external surface of the inner body 24. This enables the retention element 23 to retain and centre the inner body 24 within the outer tube 22, while also obstructing the upstream end of the peripheral channel 28 defined between the outer tube 22 and the inner body 24.

[0459] The retention element 23 is made from a material having a relatively low porosity in order to limit airflow into the peripheral channel 28. The retention element 23 is located at the upstream end of the peripheral channel 28. The retention element 23 may comprise cellulose acetate. The retention element 23 surrounds an upstream section of the inner body 24. As shown in Figure 2, the retention element 23 extends downstream from the upstream end of the inner body 24. The retention element 23 has a length of 2 mm.

[0460] The inner body 24 is also hollow. The inner body 24 defines an inner channel 26 extending longitudinally from the upstream end 25a of the inner body 24 to the downstream end 25b of the inner body 24. The inner channel 26 is uninterrupted and unobstructed. One or more peripheral channels 28 are defined around the inner channel 26, between the inner body 24 and the outer tube 22 and extend longitudinally from the upstream end 25a of the inner body 24 to the downstream end 25b of the inner body 24. The one or more peripheral channels 28 are uninterrupted and unobstructed.

[0461] The inner body 24 is shorter than the outer tube 22. The length of the outer tube 22 defines the length of the air channelling element 30. The inner body 24 has a length of 7 mm. The outer tube 22 has a length of 21 mm. The upstream end 25a of the inner body 24 is offset longitudinally from the upstream end 27a of the outer tube 22. The downstream end 25b of the inner body 24 is aligned longitudinally from the downstream end 27b of the outer tube 22. Therefore, the longitudinal distance between the upstream end 25a of the inner body 24 and the upstream end 27a of the outer tube 22 is 14 mm. Such an offset provides an empty cavity 29 within the outer tube 22 and immediately downstream of the aerosol-generating substrate 12 and immediately upstream of the inner body 24. The empty cavity 29 is effectively 14 mm long.

[0462] The aerosol-generating article 1 comprises two ventilation zones 15, 17 (first ventilation zone 15, second ventilation zone 17) at a location along the downstream section 14. The first ventilation zone 15 is located downstream of the second ventilation zone 17.

[0463] The first ventilation zone 15 is located downstream of the upstream end 25a of the inner body 24. The distance between the first ventilation zone 15 and the downstream end of the downstream section 14 (or downstream end of the aerosol-generating article 1, 2) is 12 millimetres. The distance between the first ventilation zone 15 and the downstream end of the aerosol-generating substrate 12 is 16 millimetres. The distance between the first ventilation zone 15 and the upstream end of the aerosol-generating substrate 12 is 28 millimetres.

[0464] The second ventilation zone 17 is located upstream of the upstream end 25a of the inner body 24. The distance between the second ventilation zone 17 and the downstream end of the downstream section 14 (or downstream end of the aerosol-generating article 1, 2) is 16 millimetres. The distance between the second ventilation zone 17 and the downstream end of the aerosol-generating substrate 12 is 12 millimetres. The distance between the second ventilation zone 17 and the upstream end of the aerosol-generating substrate 12 is 24 millimetres.

[0465] As shown in Figures 1 & 2, the first and second ventilation zones 15, 17 are both at a location along the air channelling element 30. The ventilation zones 15, 17 each comprise a circumferential row of perforations. The perforations extend through the peripheral wall of the outer tube 22 of the air channelling element 30. In use, the perforations allow air flow from the exterior of the aerosol-generating article 1 into the air channelling element 30. The second ventilation zone 17 is configured to provide ventilating airflow into the cavity 29 before the inner body 24, while the first ventilation zone 15 is configured to provide ventilating airflow into the one or more peripheral channels 28. The perforations of both ventilation zones 15, 17 also extend through any wrapping material surrounding the air channelling element 30. The

[0466] The mouthpiece element 18 is located immediately downstream of the air channelling element 30. The

upstream end of the mouthpiece element 18 abuts the downstream end of the air channelling element 30. The downstream end of the mouthpiece element 18 corresponds to the downstream end of the aerosol-generating article 1, 2. The mouthpiece element 18 has a length of 7 millimetres. The mouthpiece element 18 is a cylindrical plug of low-density, cellulose acetate tow circumscribed by a wrapper (not shown).

[0467] The aerosol-generating article 1, 2 comprises an upstream section 16. The upstream section 16 is located upstream of the aerosol-generating substrate 12. The upstream end of the upstream section 16 corresponds to the upstream end of the aerosol-generating article 1, 2. The upstream section 16 has a length of 5 millimetres.

[0468] The upstream section 16 comprises an upstream element 13. The upstream element 13 is located immediately upstream of the aerosol-generating substrate 12. The downstream end of the upstream element 13 abuts the upstream end of the aerosol-generating substrate 12. The upstream end of the upstream element 13 corresponds to the upstream end of the aerosol-generating article 1, 2. The upstream element 13 has a length of 5 millimetres. The upstream element 13 is a cylindrical plug of cellulose acetate circumscribed by a wrapper (not shown).

[0469] Other examples of air channelling elements that can be implemented in the aerosol-generating article 1 are shown in Figures 3a, 3b, 4a & 4b. The dimensions of the following air channelling elements and their components and their relative positioning are the same as described above unless mentioned otherwise. Accordingly, the air channelling elements shown in 3a, 3b, 4a & 4b will be described only insofar as they differ from the air channelling element 30 of the aerosol-generating article 1 shown in Figure 1.

[0470] Figures 3a & 3b shows an air channelling element 32 for use in an aerosol-generating article. In Figure 3a, a portion of the peripheral wall of the outer tube 22 is shown as being transparent for visualisation purposes to show the interior of the air channelling element 32 and the inner body 241 thereof. The inner body 241 of the air channelling element 32 comprises a central portion 41 and extension portions 51 extending outwardly from the central portion 41. The central portion 41 is a cylindrical hollow tube. The central portion 41 of the inner body 241 defines the inner channel 26. The extension portions 51 are fins circumferentially and longitudinally distributed around and along the central portion 41. The extension portions 51 engage with the peripheral wall of the outer tube 22 so as to retain and centre the inner body 241 within the outer tube 22.

[0471] Figures 4a & 4b shows an air channelling element 33 for use in an aerosol-generating article. In Figure 4a, a portion of the peripheral wall of the outer tube 22 is shown as being transparent for visualisation purposes to show the interior of the air channelling element 33 and the inner body 242 thereof. The inner body 242 of the air

channelling element 33 comprises a central portion 42 and extension portion 71 extending (radially) outwardly from the central portion 42. The extension portion 71 is effectively located at the downstream end 25b of the inner body 242. The central portion 42 is a hexagonal hollow tube. The central portion 42 of the inner body 242 defines the inner channel 26. The extension portion 71 engages with the peripheral wall of the outer tube 22 so as to retain and centre the inner body 242 within the outer tube 22. As shown in Figure 4b, the extension portion 71 comprises a honeycomb like structure extending around the central portion 42. The extension portion 71 comprises six hexagonal rings interconnected together to surround the central portion 42. In other words, the extension portion 71 is a ring structure formed from interconnected hexagonal rings surrounding the central portion 42. The extension portion 71 provides retention of the inner body 242 within the outer tube 22, while providing minimal obstruction to aerosol to flowing through the peripheral channel 28 towards the downstream end of the aerosol-generating article 1, 2.

[0472] The specific embodiments and examples described above illustrate, but do not limit, the invention. It is to be understood that other embodiments of the invention may be made and the specific embodiments and examples described herein are not exhaustive.

[0473] The aerosol-generating articles of the specific embodiment described above may further comprise a susceptor element arranged longitudinally within the aerosol-generating substrate. The susceptor may be positioned centrally within the aerosol-generating substrate and may extend along the longitudinal axis of the aerosol-generating article. The susceptor element may be in accordance with any description within the present disclosure related to a susceptor element or a susceptor.

[0474] For the purpose of the present description and of the appended claims, except where otherwise indicated, all numbers expressing amounts, quantities, percentages, and so forth, are to be understood as being modified in all instances by the term "about". In this context, therefore, a number A is understood as $A \pm 10$ percent of A. Within this context, a number A may be considered to include numerical values that are within general standard error for the measurement of the property that the number A modifies. The number A, in some instances as used in the appended claims, may deviate by the percentages enumerated above provided that the amount by which A deviates does not materially affect the basic and novel characteristic(s) of the claimed invention. Also, all ranges include the maximum and minimum points disclosed and include any intermediate ranges therein, which may or may not be specifically enumerated herein.

Claims

1. An aerosol-generating article comprising:

an aerosol-generating substrate,
an air channelling element located downstream of the aerosol-generating substrate, the air channelling element comprising:

an outer tube;
an inner body located within the outer tube;
and
an inner channel defined within the inner body,

wherein the aerosol-generating article further comprises a ventilation zone at a location along the outer tube,

wherein the ventilation zone is configured to establish fluid communication between the exterior of the aerosol-generating article and the interior of the outer tube,

wherein the ventilation zone is located downstream of the upstream end of the inner body.

2. An aerosol-generating article according to claim 1 further comprising one or more peripheral channels defined by the outer tube and the inner body.
3. An aerosol-generating article according to claim 2, wherein the inner body is configured such that substantially all of the air that enters the inner channel during use of the aerosol-generating article is through the upstream end of the inner channel.
4. An aerosol-generating article according to any one of the preceding claims, wherein the ventilation zone is located within 3 millimetres of the upstream end of the inner body.
5. An aerosol-generating article according to any one of the preceding claims, wherein the aerosol-generating article has a ventilation level of at least 30 percent.
6. An aerosol-generating article according to any one of the preceding claims, wherein the upstream end of the inner body is located away from the upstream end of the air channelling element.
7. An aerosol-generating article according to any preceding claim, wherein the length of the inner body is less than or equal to 60 percent of the length of the air channelling element.
8. An aerosol-generating article according to any one of the preceding claims, wherein the ventilation zone comprises a plurality of ventilation holes provided through the outer tube.
9. An aerosol-generating article according to any one of the preceding claims, wherein the ventilation zone is

a first ventilation zone and the aerosol-generating article comprises a second ventilation zone at a location along the outer tube, wherein the second ventilation zone is configured to establish fluid communication between the exterior of the aerosol-generating article and the interior of the outer tube, and wherein the second ventilation zone is located upstream of the upstream end of the air channelling element.

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10. An aerosol-generating article according to claim 9, wherein the resistance to draw through the first ventilation zone is greater than the resistance to draw through the second ventilation zone.

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11. An aerosol-generating article according to claim 9 or claim 10, wherein the ventilation level of the second ventilation zone is greater than the ventilation level of the first ventilation zone.

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12. An aerosol-generating article according to any one of claims 9 to 11, wherein the ventilation level of the second ventilation zone is at least 1.2 times the ventilation level of the first ventilation zone.

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13. An aerosol-generating article according to any one of claims 9 to 11, wherein the second ventilation zone is located within 3 millimetres of the upstream end of the inner body.

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14. An aerosol-generating article according to any one of the preceding claims further comprising a susceptor element located within the aerosol-generating substrate.

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15. An aerosol-generating system comprising:

an aerosol-generating article according to any one of the preceding claims; and
an aerosol-generating device configured to heat the aerosol-generating substrate of the aerosol-generating article.

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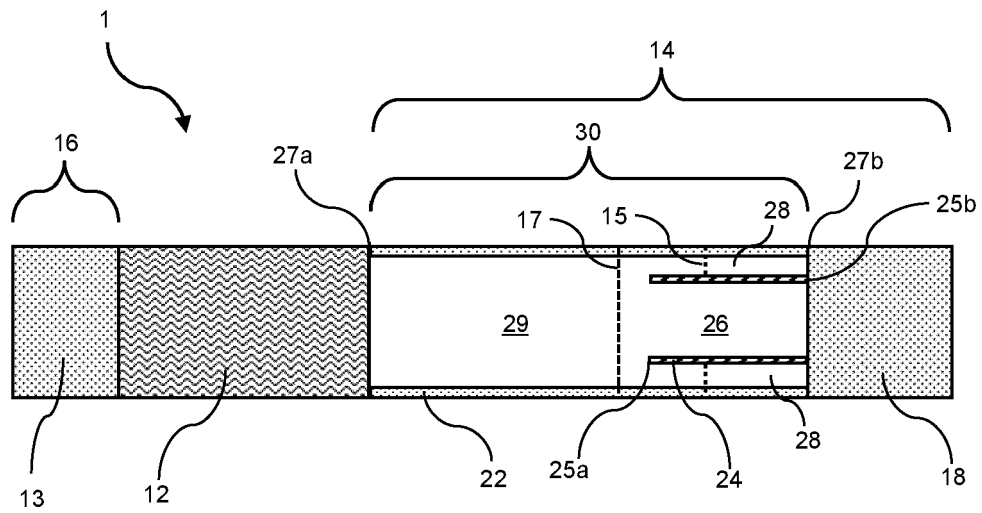


Figure 1

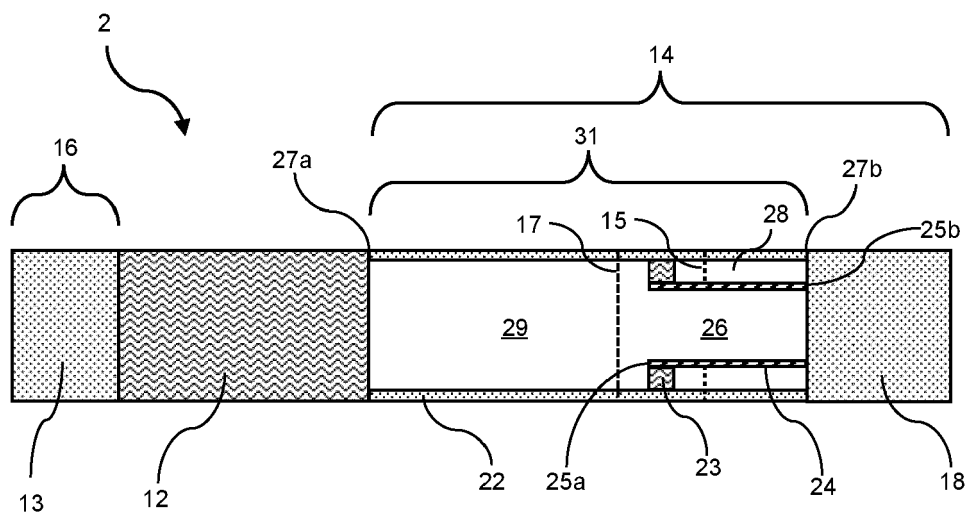


Figure 2

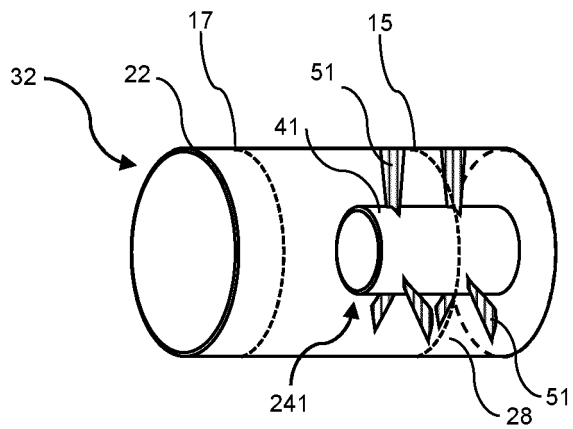


Figure 3a

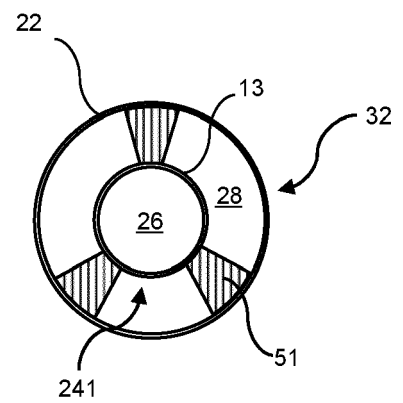


Figure 3b

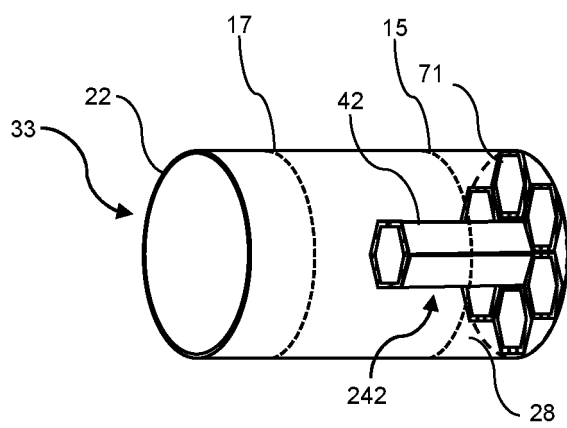


Figure 4a

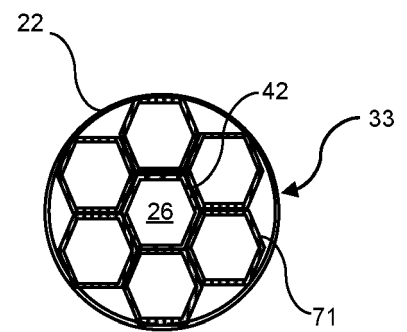


Figure 4b



EUROPEAN SEARCH REPORT

Application Number

EP 23 21 7664

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		13 May 2024	Ettlinger, Mark
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T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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