

PLUG SPACE PLUG FILTER WITH FLAVOR BEAD

BACKGROUND

Smoking articles, particularly cigarettes, generally comprise a tobacco rod of shredded tobacco (usually, in cut filler form) surrounded by a paper wrapper, and a cylindrical filter aligned in an end-to-end relationship with the tobacco rod. The tobacco rod is generally between about 6.0 millimeters and about 10.0 millimeters in diameter and between about 50 millimeters and about 125 millimeters in length.

Typically, the filter includes a plug of cellulose acetate tow attached to the tobacco rod by tipping paper. Ventilation of mainstream smoke can be achieved with a row or rows of perforations about a location along the filter.

When flavorants such as menthol are applied to cigarette filter in the form of a solution, staining or spotting of the outer surface of the cigarette can occur, particularly at high loadings of menthol in large amounts of solvent. Further, such a direct application of flavorants such as menthol to the cigarette filter does not allow for the regulation of menthol release during smoking and can lead to migration and loss of menthol during storage of the cigarette.

Accordingly, it would be desirable to provide a filter component for a smoking article, which provides added flavorant such as menthol to the mainstream smoke and can be easily manufactured and produced with existing filter forming equipment.

SUMMARY

In accordance with a first aspect, there is provided a filter component for a smoking article comprising:

an upstream segment of filter material;

a downstream segment of filter material in a spaced apart relation to the upstream segment of filter material so as to define a cavity therebetween; and

a single crushable flavor capsule disposed in the cavity, wherein the flavor capsule has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material, and the outer diameter of the flavor capsule does not exceed an outer diameter of either the upstream segment or the downstream segment of filter material,

wherein the upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component and wherein the upstream segment of filter material, the downstream segment of filter material and the flavor capsule are circumscribed by a filter wrapper, one or more rows of perforations being formed through the filter wrapper at an upstream end portion of the filter.

In accordance with an exemplary embodiment, a filter component for a smoking article comprises: an upstream segment of filter material; a downstream segment of filter material in a spaced apart relation to the upstream segment of filter material so as to define a cavity therebetween; and a single flavor bead comprising tobacco particles and water disposed in the cavity. The flavor bead preferably has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material and wherein the outer diameter of the flavor bead does not exceed an outer diameter of either the upstream segment or downstream segment of filter material. The upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component.

By 'spaced-apart relation' is meant the longitudinal distance between the upstream segment of filter material and the downstream segment of filter material (*i.e.*, the length of the cavity).

The upstream segment and the downstream segment of filter material may each comprise a plug of cellulose acetate tow.

In accordance with a second aspect, there is provided a smoking article comprising: a tobacco rod; and a filter component with the first aspect.

In accordance with another exemplary embodiment, a smoking article comprises: a tobacco rod; and a filter component (or multi-component filter) comprising: an upstream segment of filter material; a downstream segment of filter material in a spaced apart relation to

the upstream segment of filter material so as to define a cavity therebetween; a single flavor bead comprising tobacco particles and water disposed in the cavity, and wherein the flavor bead has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material and wherein the outer diameter of the flavor bead does not exceed an outer diameter of either the upstream or downstream segments of filter material. The upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component.

The filter component may comprise a filter wrapper which circumscribes the upstream segment of filter material, the downstream segment of filter material and the flavor bead.

The smoking article may further comprise ventilation around an outer periphery of the filter component.

In accordance with a third aspect, there is provided a method of manufacturing a filter component comprising:
dispensing a downstream filter segment having a first length onto a filter rod forming
portion of a filter rod forming apparatus;

dispensing an upstream filter segment having a second length in a spaced apart
relationship to the downstream filter segment so as to define a cavity therebetween onto the
filter rod forming portion; and

placing a single crushable flavor capsule within the cavity,
circumscribing the downstream filter segment, the upstream filter segment and the flavor
capsule with a filter wrapper, thus obtaining a filter assembly;

wherein the flavor capsule has an outer diameter, which is at least 75% of the spaced
apart relation of the upstream segment of filter material and the downstream segment of filter
material, wherein the outer diameter of the flavor capsule does not exceed an outer diameter of
the upstream and downstream segments of filter material; and

wherein the upstream segment of filter material has the lowest RTD (resistance to draw)
of the segments of the filter component.

In accordance with a further exemplary embodiment, a method of manufacturing a filter component comprises the steps of: dispensing a downstream filter segment having a downstream length onto a filter rod forming portion of a filter rod forming apparatus; dispensing an upstream filter segment having an upstream length in a spaced apart relationship to the downstream filter segment so as to define a cavity therebetween onto the filter rod forming portion; placing a single flavor bead comprising tobacco particles and water within the cavity; wherein the flavor bead has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material, wherein the outer diameter of the flavor bead does not exceed an outer diameter of the upstream and downstream segments of filter material and wherein the upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component.

The method may further comprise circumscribing the downstream filter segment, the upstream filter segment and the flavor bead with a filter wrapper.

The method may comprise forming a filter rod comprising at least two segments of the downstream filter segment, at least two segments of the upstream filter segment, and at least two flavor beads in the cavities formed between the downstream filter segments and the upstream filter segments. Preferably the method further comprises circumscribing the filter rod with a filter wrapper.

Preferably, the method further comprises cutting the filter rod into a plurality of individual filter components having at least one flavor bead therein.

Preferably, the method further comprises placing a tobacco rod adjacent to a tobacco end of an individual filter component such that the filter component and the tobacco rod are axially aligned in an end-to-end relationship and forms a smoking article.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a smoking article in accordance with an embodiment;

FIG. 2 is a cross-sectional view of a smoking article in accordance with one embodiment;

FIG. 3 is a cross-sectional view of a filter rod in accordance with an embodiment;

FIG. 4 is a cross-sectional view of a smoking article in accordance with a further embodiment;

CLAIMS:

1. A filter component for a smoking article comprising:
an upstream segment of filter material;
5 a downstream segment of filter material in a spaced apart relation to the upstream segment of filter material so as to define a cavity therebetween; and
a single crushable flavor capsule disposed in the cavity, wherein the flavor capsule has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material, and the outer diameter of the
10 flavor capsule does not exceed an outer diameter of either the upstream segment or the downstream segment of filter material,
wherein the upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component and wherein the upstream segment of filter material, the downstream segment of filter material and the flavor capsule are circumscribed by a filter
15 wrapper, one or more rows of perforations being formed through the filter wrapper at an upstream end portion of the filter.
2. A filter component according to claim 1, further comprising a recess segment on a downstream end of the downstream segment of filter material.
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3. A filter component according to claim 1, wherein the downstream segment of filter material has a length, which is at least twice a length of the upstream segment of filter material.
4. A filter component according to claim 1, wherein the upstream segment of filter material
25 is between about 5 millimeters and about 10 millimeters in length.
5. A filter component according to claim 1, wherein the downstream segment of filter material is between about 5 millimeters and about 20 millimeters in length
- 30 6. A filter component according to claim 1, wherein the cavity is between about 5 millimeters and about 7 millimeters in length.
7. A filter component according to claim 1, wherein the flavor capsule is in the form of a spheroid having a diameter of about 4.5 millimeters to about 5 millimeters.
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8. A filter component according to claim 1, wherein the flavor capsule is a polymer coated mentholated flavor capsule.

9. A smoking article comprising:
a tobacco rod; and
a filter component according to any one of claims 1 to 8:

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10. A method of manufacturing a filter component comprising:
dispensing a downstream filter segment having a first length onto a filter rod forming
portion of a filter rod forming apparatus;
dispensing an upstream filter segment having a second length in a spaced apart
relationship to the downstream filter segment so as to define a cavity therebetween onto the
filter rod forming portion; and
placing a single crushable flavor capsule within the cavity,
circumscribing the downstream filter segment, the upstream filter segment and the flavor
capsule with a filter wrapper, thus obtaining a filter assembly;

- 15 wherein the flavor capsule has an outer diameter, which is at least 75% of the spaced
apart relation of the upstream segment of filter material and the downstream segment of filter
material, wherein the outer diameter of the flavor capsule does not exceed an outer diameter of
the upstream and downstream segments of filter material; and
wherein the upstream segment of filter material has the lowest RTD (resistance to draw)
20 of the segments of the filter component.

11. A method according to claim 10, comprising forming a filter rod comprising at least two
segments of the downstream filter segment, at least two segments of the upstream filter
25 segment, and at least two flavor capsules in the cavities formed between the downstream filter
segments and the upstream filter segments.

12. A method according to claim 11, further comprising circumscribing the filter rod with a
filter wrapper.

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13. A method according to claim 10, further comprising forming a recess segment adjacent
to either the downstream filter segment or the upstream filter segment.