

SMOKING ARTICLE WITH CONCENTRIC FILTER

The present disclosure relates to a smoking article with a concentric filter segment with a sorbent disposed in the core of the concentric filter segment.

5 Filter cigarettes typically comprise a wrapped rod of tobacco cut filler and a cylindrical filter aligned in end-to-end relationship with the wrapped tobacco rod, with the filter attached to the tobacco rod by tipping paper. In conventional filter cigarettes, the filter may consist of a plug of cellulose acetate tow wrapped in porous plug wrap. In some cases, it is known to use a filter plug with a concentric core design wherein one material is used for the inner core
10 and another material surrounds the core and forms an outer portion of the concentric filter plug.

It would be desirable to provide a novel smoking article that has an efficient sorbent containing filter segment to capture smoke constituents. It is desirable that the novel smoking article utilize a minimum amount of sorbent material to reduce cost and potentially
15 minimize the effect on taste. Providing a novel smoking article construction that improves sorbent efficiency is particularly desirable.

According to the current disclosure, there is provided a smoking article having a tobacco rod and a filter attached to the tobacco rod. The filter includes a concentric sorbent segment having a central core portion with sorbent material and an outer periphery layer
20 circumscribed about the central core portion. The central core portion has lower resistance to draw, a lower density, or both a lower resistance to draw and density, than the periphery layer. A ventilation zone is disposed adjacent an upstream end of the concentric sorbent segment.

In one aspect of the invention, there is provided a smoking article comprising: a
25 tobacco rod; a filter attached to the tobacco rod, the filter comprising; a concentric sorbent segment including a central core portion comprising sorbent material and an outer periphery layer circumscribed about the central core portion, the central core portion having a lower resistance to draw than the periphery layer, at least about 80 weight % of the sorbent in the smoking article is disposed in the central core portion; and a ventilation zone disposed
30 adjacent an upstream end of the concentric sorbent segment wherein the ventilation zone is disposed within 5 mm or within about 3 mm or within about 1 mm upstream from the upstream end of the concentric sorbent segment.

Smoking articles according to the present disclosure provide an effective way to improve smoke constituent contact with the sorbent material. Smoke constituents preferentially pass through the central core portion of the concentric sorbent segment. The novel smoking article construction concentrates mainstream smoke flow through the central
5 core portion of the concentric sorbent segment, increasing the efficiency of the sorbent material. This in turn allows for the use of less sorbent material (and associated cost) to achieve the desired level of smoke constituent capture. In addition, the use of less sorbent material in the smoking article may assist in minimizing the sorbent material's effect on the taste of the smoking article.

CLAIMS

1. A smoking article comprising:

a tobacco rod;

a filter attached to the tobacco rod, the filter comprising;

a concentric sorbent segment including a central core portion comprising sorbent material and an outer periphery layer circumscribed about the central core portion, the central core portion having a lower resistance to draw than the periphery layer, at least about 80 weight % of the sorbent in the smoking article is disposed in the central core portion; and

a ventilation zone disposed adjacent an upstream end of the concentric sorbent segment.

~~2. A smoking article according to claim 1 wherein the ventilation zone is disposed within about 5 mm or within about 3 mm or within about 1 mm of the upstream end of the concentric sorbent segment.~~

~~3. A smoking article according to claim 1 wherein the ventilation zone is disposed within about 5 mm or within about 3 mm or within about 1 mm upstream from the upstream end of the concentric sorbent segment.~~

~~42. A smoking article according to claims 1 to 3 further comprising a second filter segment axially aligned with and between the tobacco rod and the concentric sorbent segment and the ventilation is disposed along a length of the second filter segment.~~

~~53. A smoking article according to claim 42 wherein the concentric sorbent segment separates a third filter segment from the second filter segment.~~

~~64. A smoking article according to claim 53 wherein the third filter segment comprises cellulose acetate tow and the second filter segment comprises cellulose acetate tow~~

~~75. A smoking article according to claims 1 to 64 wherein a resistance to draw of the central core portion is about 75% or less of a resistance to draw of the periphery layer.~~

86. A smoking article according to claims 1 to ~~7~~5 wherein the central core portion has a lower density than the periphery layer.

97. A smoking article according to claims 1 to ~~8~~6 wherein the smoking article comprises less than about 25 mg of sorbent material.

~~108~~. A smoking article according to claims 1 to ~~9~~7 wherein the sorbent comprises activated carbon.

~~119~~. A smoking article according to claims 1 to ~~10~~8 wherein the smoking article comprises less than about 15 milligrams of activated carbon.

~~1210~~. A smoking article according to claims 1 to ~~11~~9 wherein the entire amount of the sorbent in the smoking article is disposed in the central core portion of the smoking article.

~~1311~~. A smoking article according to claims 1 to ~~12~~10 wherein the central core portion comprises carbon material dispersed in cellulose material.

~~1412~~. A smoking article according to claims 1 to ~~13~~11 wherein the central core portion comprises paper impregnated with carbon material and the periphery layer comprises cellulose acetate tow.

~~1513~~. A smoking article according to claims 1 to ~~14~~12 further comprising a second ventilation zone disposed along the concentric sorbent segment