CAPSULED ADSORBENT FLAVORED FILTER

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Abstract

A cigarette comprises a filter and a tobacco rod. The filter includes a capsule having opposite end walls with flavored adsorbent particles in the enclosure of the capsule. The end walls are perforated so that mainstream tobacco smoke passes through the capsule during the smoking process to thereby modify the characteristics of the smoke. Overall the capsule enables more exact filling of adsorbent particles and more control of flavor per cigarette.
CAPSULED ADSORBENT FLAVORED FILTER

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a cigarette comprising a tobacco rod and an adjoining filter, and more particularly to a filter that includes a capsule packed with flavored adsorbent.

[0002] Cigarettes with filters are old in the art, and filters that include adsorbents also are well known. However, when adsorbents are used in cigarette filter constructions it is important that they be presented in a fully packed condition so as to avoid or substantially reduce channeling of mainstream tobacco smoke in and around the adsorbent. Moreover, although flavors have been added to mainstream tobacco smoke it is important to maintain such flavors as fresh as possible for extended shelf life of the cigarette.

SUMMARY OF THE INVENTION

[0003] Accordingly, one of the objects of the present invention is a cigarette filter containing adsorbent particles in a fully packed condition so as to avoid channeling of mainstream tobacco smoke in and around the adsorbent particles.

[0004] Another object of the present invention is a cigarette filter containing flavored adsorbent particles wherein the amount of flavor is precise.

[0005] Still another object of the present invention is a cigarette filter containing fully packed flavored adsorbent particles within a capsule to preserve freshness of the flavored particles.

[0006] In accordance with the present invention, a cigarette comprises a filter and an adjoining tobacco rod. The filter includes a capsule having a first end wall with a surrounding side wall secured thereto. Adsorbent particles are packed into the enclosure of the capsule, and flavorant is placed on the particles. A second end wall caps-off the side wall, and a plurality of perforations are located in the end walls of the capsule. During smoking of the cigarette, mainstream tobacco smoke passes into and through the capsule to thereby modify the characteristics of the smoke.

[0007] In one embodiment of the present invention, the adsorbent spherical carbon particles comprise a combination of two different sizes. Also, in the preferred embodiment of the present invention, the filter has a plug-space-plug configuration with the capsule in the central space. The plugs on opposite ends of the capsule may each comprise cellulose acetate tow.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Novel features and advantages of the present invention in addition to those mentioned above will become apparent to persons of ordinary skill in the art from a reading of the following detailed description in conjunction with the accompanying drawings wherein similar referenced characters refer to similar parts and in which:

[0009] FIG. 1 is a side elevational view of a cigarette comprising a tobacco rod and a filter that includes a capsule adsorbent and flavorant, according to the present invention, with portions of the filter broken away to show interior details;

[0010] FIG. 2 is a perspective view of the capsuled adsorbent and flavorant of the cigarette filter shown in FIG. 1;

[0011] FIG. 3 is an end elevational view of the capsuled adsorbent and flavorant shown in FIGS. 1 and 2; and

[0012] FIG. 4 is an elevational view of the capsuled adsorbent with flavorant being applied to the adsorbent within the capsule prior to capping the capsule, according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0013] Referring in more particularity to the drawings, FIG. 1 illustrates a cigarette 10 comprising a tobacco rod 12 and a filter 14 adjoining the tobacco rod. Filter 14 has a plug-space-plug configuration and the central space provides a compartment for a capsule 16 containing a flavored adsorbent material, as explained more fully below.

[0014] Plugs 18 and 20 each of cellulose acetate tow are located on opposite ends of the capsule 16. Tipping paper 22 is wrapped around the filter 14 and joins the filter to the tobacco rod. Perforations 24 may be provided in the tipping paper for the introduction of air which dilutes the mainstream tobacco smoke following through the filter.

[0015] Capsule 16 comprises an impervious surrounding side wall 24 and a first and second end wall 26, 28. Adsorbent particles 30, 32 are fully packed into the enclosure of the capsule, and a flavorant 34 is applied to the particles. Both end walls 26 and 28 include a plurality of perforations 34 which enable mainstream smoke to pass through the capsule. The adsorbent particles may comprise carbon particles or particles of APS silica gel (3-aminopropylsilyl groups covalently bonded to silica gel). The particles may also include tobacco beads.

[0016] The capsule 16 is produced by initially forming the surrounding side wall 24 with one end wall 26 attached thereto. Particles 28, 30 each having a different size are fully packed into the capsule and a precise amount of flavorant 34 is delivered onto the particles by an applicator device 38. The opposite end of the surrounding side wall 24 is then capped-off by end wall 28.

[0017] By encapsulating the particles 30, 32 in this particular manner, a capsule with fully packed particles is presented and such fully packed condition avoids channeling of mainstream tobacco smoke in and around the particles. Vibration may be applied to obtain a fully packed capsule. Hence, the smoke is subjected to the full effect of the adsorbent particles and the flavorant applied thereto. Moreover, the effectiveness of the encapsulated adsorbent particles 28, 30 is maintained over long periods thereby significantly increasing the shelf life of cigarette filters made in this manner. Overall the capsule 16 enables more exact filing of adsorbent particles 28, 30 and more control of flavor 34 per cigarette.

What is claimed is:

1. A capsule for placement in a cigarette filter comprising an enclosure having a first end wall with a surrounding side wall secured thereto, adsorbent particles packed into the enclosure, flavorant on the particles, a second end wall capping-off the side wall, and a plurality of perforations in
the end walls whereby when the capsule is placed in a cigarette filter tobacco smoke passes into and through the capsule to thereby modify the characteristics of the smoke.

2. A capsule as in claim 1 wherein the particles are selected from the group consisting of carbon and APS silica gel.

3. A capsule as in claim 2 wherein the particles are spherical carbon particles.

4. A capsule as in claim 3 wherein the adsorbent spherical carbon particles comprise a combination of particles of two different sizes.

5. A cigarette comprising a filter and a tobacco rod, the filter including a capsule having a first end wall with a surrounding side wall secured thereto, adsorbent particles packed into the capsule, a flavorant on the particles, a second end wall capping-off the side wall, and a plurality of perforations in the end walls whereby during smoking of the cigarette tobacco smoke passes into and through the capsule to thereby modify the characteristics of the smoke.

6. A cigarette as in claim 5 wherein the particles are selected from the group consisting of carbon and APS silica gel.

7. A cigarette as in claim 6 wherein the particles are spherical carbon particles.

8. A cigarette as in claim 7 wherein the adsorbent spherical carbon particles comprise a combination of particles of two different sizes.

9. A cigarette as in claim 5 wherein the filter has a plug-space-plug configuration with the capsule in the space and wherein the plugs on opposite ends of the capsule each comprise cellulose acetate tow.

10. A method of producing a capsule for placement in a cigarette filter comprising the steps of forming an enclosure having a first end wall with a surrounding side wall secured thereto, packing adsorbent particles into the enclosure, applying flavorant onto the particles, capping-off the side wall with a second end wall, and providing perforations in the end walls whereby when the capsule is placed in a cigarette filter tobacco smoke passes into and through the capsule to thereby modify the characteristics of the smoke.

11. A method as in claim 10 wherein the particles are selected from the group consisting of carbon and APS silica gel.

12. A method as in claim 11 wherein the particles are spherical carbon particles.

13. A method as in claim 12 wherein the spherical carbon particles comprise a combination of particles of two different sizes.

14. A method as in claim 10 including the step of placing the capsule in a space within a cigarette filter.

15. A method as in claim 14 including the step of placing cellulose acetate plugs at opposite ends of the capsule.