modifying the surface of the particles. However, such processes may lead to a loss of adsorption efficiency. Activated carbon made from certain polymers may be less fragile than activated carbon made from vegetal sources, but in many cases is so hard or abrasive that it can damage industrial manufacturing equipment.

One object of the present invention is to employ a source of activated carbon other than coconut shells for use in smoking article filters.

Another object of the present invention is to include activated carbon into a smoking article, where the activated carbon exhibits less particle breakthrough during smoking than coconut shell-derived activated carbon currently employed in smoking article filters, while having an adsorption efficiency similar to or greater than coconut shell-derived activated carbon currently employed in smoking article filters.

Another object of the present invention is to include activated carbon in a smoking article, where the activated carbon exhibits less dusting during manufacturing than coconut shell-derived activated carbon currently employed in smoking article filters.

Other objects of the present invention will be evident to those of skill in the art upon reading and understanding the present disclosure, which includes the claims that follow and accompanying drawings.

In aspects of the present invention, a smoking article includes a smokable material and a filter downstream of the smokable material. The filter includes activated carbon formed from a physical activation process that includes carbonizing a composition comprising a cellulosic material and an added activatable binder. Preferably, the binder comprises lignin. In aspects of the present invention, activated carbon material formed from a composition comprising cellulosic material and an activatable binder is used in the manufacture of a filter for a smoking article.

One aspect relates to a smoking article having low levels of particle breakthrough, comprising: a smokable material; and a filter comprising activated carbon material downstream of the smokable material, the activated carbon material having a BET of between 1000 and 2000 m^2/g and a ball-pan hardness of greater than about 95%, wherein the activated carbon material is formed from a process that includes physically activating a composition comprising cellulosic material and an added activatable binder.

In aspects of the present invention, a method for manufacturing a filter for a smoking article, or a smoking article having a filter, includes providing activated carbon material formed from a physical activation process that includes carbonizing a composition comprising cellulosic material and an added activatable binder; providing filter material for use in a smoking article; and

combining the activated carbon material and the filter material to form a filter for a smoking article. The filter may be incorporated into a smoking article. One aspect of the invention thus relates to the use of activated carbon material formed from a physical activation process that includes carbonizing a composition comprising cellulosic material and an added activatable binder in the manufacture of a smoking article.

CLAIMS:

1. A method comprising:

providing activated carbon material formed from a physical activation process that includes carbonizing a composition comprising cellulosic material and an added activatable binder;

providing filter material for use in a smoking article; and

combining the activated carbon material and the filter material to form a filter for a smoking article.

2. A method according to claim 1, further comprising incorporating the formed filter into a smoking article.

3. A method according to claim 1 or claim 2, wherein the activated carbon material is extruded activated carbon material.

4. A method according to any one of claims 1-3, wherein the activatable binder comprises a lignin compound.

5. A method according to any one of claims 1-4, wherein the cellulosic material comprises one or more of wood and olive stone.

6. Use of activated carbon material formed from a physical activation process that includes carbonizing a composition comprising cellulosic material and an added activatable binder in the manufacture of a smoking article.

7. A use according to claim 6, wherein the activated carbon material is extruded activated carbon material.

8. A use according to claim 6 or 7, wherein the activatable binder comprises a lignin compound.

9. A use according to any one of claims 6-8, wherein the cellulosic material comprises one or more of wood and olive stone.

10. A smoking article comprising:

a smokable material; and

a filter comprising activated carbon material downstream of the smokable material, the activated carbon material having a BET of between 1000 and 2000 m^2/g and a ball-pan hardness of greater than about 95%,

wherein the activated carbon material is formed from a physical activation process that includes carbonizing a composition comprising cellulosic material and an added activatable binder; and

wherein the activated carbon material exhibits, in a standard plug-space-plug configuration test filter, less particle breakthrough than granulated coconut shell activated carbon activated to the same degree.

11. A smoking article according to claim 10, wherein the activated carbon material has a BET from about 1200 m^2/g to about 1800 m^2/g.

12. A smoking article according to claim 10 or 11, wherein the activated carbon material exhibits about 10% or more reduction in particle breakthrough than the granulated coconut shell activated carbon activated to the same degree.

13. A smoking article according to any one of claims 10-12, wherein no coating or residue is disposed on the activated carbon material.

14. A smoking article according to any one of claims 10-13, wherein the activated carbon material is extruded activated carbon material.

15. A smoking article according to any one of claims 10-14, wherein the activated carbon material comprises cellulosic material and an activatable binder.