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FIRE STARTING COMPOSITION

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The present invention relates to improved heating compositions and method of making the compositions. More particularly, the present invention is directed to improved heating compositions for cooking and heating purposes such as, for example, for barbeques in stoves and fireplaces, both indoors and outdoors and also as a source of light and heat.

In copending application Ser. No. 288,866, now abandoned, the fire starting composition therein disclosed broadly comprises a wax composition of any convenient size or shape containing a minor amount of inorganic substantially non-combustible microfibers or organic non-fusible microfibers or a mixture thereof disposed therein.

The present invention comprises an improved heating composition comprising a carbonaceous material such as charcoal, petroleum coke or coal coke, wax and a fibrous material, the fibrous material consisting of an inorganic substantially non-combustible microfibrous material component or an organic non-fusible microfibrous material component or mixtures thereof, the microfibrous material component being distributed randomly in the wax component and being present therein in an amount sufficient to increase the burning rate of the wax component and wherein the wax component is disposed on and about the carbonaceous component.

The improved heating composition of the present invention comprises from 0.5 to about 15 percent by weight of a wax component, from 0.001 to about 5 percent by weight of a microfibrous material component, the balance being the carbonaceous material.

The advantages of the improved present heating composition of the present invention will become apparent in the light of the accompanying detailed disclosure.

One of the novel features of the improved heating composition of the present invention is its ability to spread the flame from the point of ignition over the entire exposed surface of the composition. This novel feature is attributable to the microfibrous material component in cooperation with the wax component. This novel spreading power produces an increased amount of heat which is desirable for ignition of the charcoal component. The ability of the composition to spread the flame from the point or place of ignition over the entire surface of the composition exposed to the air causes the more difficult combustible charcoal component about which the wax and fiber components are disposed to be ignited much more rapidly and begin to burn sooner. Thus, the resulting ignited charcoal will begin to burn more rapidly and will be more readily available as a source of heat for cooking purposes.

Another function of the microfibrous component is to provide a support for the wax component, thereby avoiding excessive run-off of molten wax when the composition is fully ignited.

The particular size and/or shape of the composition of the present invention is somewhat dependent on the particular end use and the method of manufacture. For example, if the composition is to be used in an outdoor

grill or fireplace, coal and the like, including mixtures thereof, then the composition is preferably shaped to expose a maximum surface area to the atmosphere, thus permitting fairly rapid combustion of the composition when ignited. Satisfactory shapes for the compositions are a square or rectangular tablet or pellet since these configurations expose a greater surface area to the atmosphere. The composition can be shaped in the form of a relatively flat, thin wafer or tablet or elongated like a log. Desirably it is shaped in the form of a briquette such as a charcoal briquette since such shape is conducive to exposure of considerable surface area to the atmosphere and present briquetting techniques can be readily used in the present invention without major modifications thereof.

The wax component of the composition of the present invention can be a natural animal or mineral wax, such as bees wax, montan wax, solid fatty acids, tallow and ozocerite; a petroleum wax, or a synthetic wax such as the commercially available wax-like materials sold under trade names such as Arneels, Armeens, Carbowax, Acrawax and the like; as well as mixtures of any of the above types of wax.

The preferred wax component is a petroleum wax and may be a paraffin or a microcrystalline wax or a mixture thereof. Such waxes are normally solid at room temperature and are composed of mainly long chain aliphatic hydrocarbons.

The paraffin wax can be a crude slack wax that may be partially refined, a scale wax, a refined wax or a mixture of such waxes. The microcrystalline wax can be a tank bottoms wax, a motor oil wax, a residual microcrystalline wax or a mixture of such waxes. Typical physical properties for a paraffin wax obtained from a paraffinic crude distillate by filtering and solvent deoiling include a melting point temperature of 125–127° F. and an oil content of not more than 9.5%.

Desirably, the melting point temperature of the wax used in the present invention should be between about 100° and 200° F., preferably about 120° to 180° F., to achieve fairly rapid melting of the wax and assist in spreading the flame from the point of ignition to the adjacent surfaces. While waxes having a melting point temperature of less than 100° F. and greater than 200° F. can be used, such waxes do not perform as well as the 120° to 180° F. melting point temperature waxes in the composition of the present invention.

The microfibrous material component can be an inorganic substantially non-combustible microfibrous material or an organic non-fusible microfibrous material or mixtures thereof.

The inorganic substantially non-combustible microfibrous material component of the composition can be of the inorganic fibrous type such as asbestos, glass and the like including mixtures thereof. Effective inorganic microfibrous materials include glass fibers of various types, such as soda-lime glass fibers, borosilicate (Pyrex) fibers and lead glass fibers, asbestos fibers and quartz fibers. These inorganic microfibers are at least substantially insoluble in and nonreactive with most liquid hydrocarbons.

A preferred type of asbestos fibers is chrysotile fibers. A particularly preferred type of glass fibers is that marketed by Johns-Manville under their code numbers 102 and 104. Johns-Manville glass fibers codes 106, 108, 110 and 112 can be also used.

It is desirable to employ inorganic microfibers having

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an average fiber diameter not greater than about 5.0 microns, preferably between 0.01 and 4 microns in diameter for the most consistent results. The use of inorganic microfibrous materials having diameters greater than 5 microns tends to give erratic spreading of the flame from the point of ignition of the composition.

A satisfactory range for the glass microfibers in the compositions of the invention is from .001 to 0.4 percent by weight when the smaller diameter glass microfibers are used. Glass microfibers having diameters above about 0.75 micron, for example in the range 0.75 to 4 microns, requires at least 0.2 percent of these materials in the composition to promote spreading of the flame.

Asbestos microfibrous materials have also proven to be successful but the use of these fibers requires a greater amount thereof than the glass microfibers. A satisfactory range for asbestos microfibers is from .01 to 4 percent by weight.

The organic non-fusible microfibrous material component can be obtained from cotton linters, wood pulp such as newsprint pulp, wood shavings, reconstituted cellulose, such as rayon, or mixtures thereof. The organic microfibrous material component must be of the non-fusible type to perform in a satisfactory manner in the fire starting composition of the present invention. Organic fusible fibrous materials such as "Dacron," polypropylene and "Orlon" microfibers are representative of the fusible type of organic fibers. These materials will not perform satisfactorily in the composition of the invention because they do not permit the flame to spread from the point of ignition of the composition to the remaining exposed surfaces and/or the flame to continue to burn after spreading to the relatively adjacent surfaces. A preferred type of an organic non-fusible microfibrous material is cotton linters.

The organic non-fusible microfibers may have an average fiber diameter between about 1 and about 100 microns, but a range between 10 and 25 microns has been found most suitable in many instances. Excellent results have been attained with cotton linters having an average fiber diameter of about 15 microns.

The average length of the organic non-fusible microfibers can vary from about 0.1 to about 20 millimeters. Use of lengths in the range between 2 and 5 millimeters are particularly preferred for rapid spreading of the flame about the finished composition.

A satisfactory range for the organic non-fusible microfibers in the composition is from about .01 up to about 2 percent by weight. Use of amounts less than about .01 percent by weight does not provide satisfactory flame spreading properties while amounts in excess of about 2 percent by weight are difficult to blend and to mold.

The charcoal briquette component used in the composition of the present invention can be a commercially available briquette sold as cooking fuel. Such briquettes generally are prepared from a carbonaceous material such as wood or lignite which has been carbonized, ground to fine particles, admixed with a suitable binding agent such as starch and water, and formed into a briquette at relatively high pressures.

Following is a description by way of example of methods of carrying out the practice of the present invention.

EXAMPLE 1

There was introduced into a Waring Blendor a refined petroleum paraffin wax having a melting point temperature range of 125–127° F. and an oil content of less than 5 percent and chrysotile asbestos microfibers JM grade 7R–06 in an amount sufficient to provide a 5% by weight concentration of fibers therein. The admixture was heated to a temperature of about 150° F. with stirring as the wax became liquefied. A number of commercially available charcoal briquettes were dipped into the liquefied admixture to the extent of about one-half of their length. The briquettes were withdrawn and the wax coating allowed to solidify on cooling. The cooled briquettes were arranged in a pile on a wire grid and one of the lower briquettes was ignited by being contacted on the surface thereof with a lighted match. The ignited briquette burned briskly and the other briquettes were quickly lit and burning. A good heating and cooking fire was quickly established.

Control example

Following the procedure of Example 1 above, additional charcoal briquettes were dipped into the molten wax used in the example above which did not contain any microfibrous material therein. The dipped briquettes were withdrawn and the coating of wax was permitted to solidify thereon on cooling. A lighted match was brought into contact with several of the coated briquettes. None of the briquettes ignited. This example demonstrates the necessity of the microfibrous material for ignition.

The wax fiber coating can also be applied to the briquettes by spraying or by soaking or impregnating the briquettes in the wax-fiber mixture.

EXAMPLE 2

Following the procedure of Example 1 above, a quantity of the same paraffin wax was introduced into a Waring Blendor and there was added thereto 5% by weight of asbestos microfibers Paperbestos No. 3. The admixture was heated to a temperature of about 180° with stirring as the wax melted. A charcoal briquette weighing 26.5 grams was immersed in the liquefied wax fiber mixture to the extent of about one-half of its length and the resulting coated briquette was withdrawn. On cooling the briquette was found to have increased its weight by 8.3% by weight. The briquette was ignited with a match near the coated surface and the entire surface was soon burning rapidly.

The composition of the present invention possesses an additional advantage over uncoated briquettes of the prior art in that the wax-fiber coated briquettes do not leave an objectionable carbonaceous residue on objects and skin when in contact therewith. The presently available briquettes have a marked tendency to leave carbonaceous deposits on any surface they come in contact with.

We claim:

1. A quick igniting composition comprising from about 80 to about 99.5 percent by weight of a carbonaceous briquette containing from about 0.5 to about 20 percent by weight of a coating of a wax-fiber mixture thereon, said fiber being selected from the class consisting of from about 0.001 to 4 percent by weight of an inorganic substantially non-combustible microfibrous material, from 0.01 to 2 percent by weight of an organic non-fusible microfibrous material and mixtures thereof, said fiber component being present in the wax to increase the burning rate of said wax.

2. A composition as claimed in claim **1** wherein the fibrous component comprises glass microfibers having an average fiber diameter in the range of from 0.01 to about 0.4 micron.

3. A composition as claimed in claim **1** wherein the fibrous component comprises asbestos microfibers having an average fiber diameter between 0.1 and 4 microns.

4. A composition as claimed in claim **1** wherein the said wax component comprises a refined petroleum wax having a melting point temperature range of from about 100° to 200° F.

5. A composition as claimed in claim **1** wherein the carbonaceous briquette is a charcoal briquette.

6. A quick igniting composition comprising a charcoal briquette coated with a mixture of a wax component and a microfibrous material component, said wax component comprising 0.5 to about 15 percent by weight of the composition and being a refined petroleum wax having a melting point temperature range of from about 100° F. to 200° F., and wherein said wax contains said fibrous component dispersed therein, said fibrous com-

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ponent being present in an amount sufficient to increase the burning rate of said wax, said fibrous material being selected from the class consisting of from 0.001 to about 5 percent by weight of the composition of an inorganic substantially non-combustible microfibrous material having a fiber diameter between 0.01 and 4 microns, from 0.01 to about 2 percent by weight of the composition of an organic non-fusible material having a fiber diameter between 10 and 25 microns and mixtures thereof.

7. A composition as claimed in claim **6** wherein the fibrous component comprises asbestos microfibers.

8. A composition as claimed in claim **6** wherein the fibrous component comprises at least 0.2 percent by weight of glass microfibers having an average diameter between 0.75 and 4 microns.

9. A composition as claimed in claim **6** wherein the wax component comprises a refined petroleum wax having a melting point temperature range of from about 120° to 180° F.

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