WOVEN STORAGE BAG FOR CHARCOAL

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ABSTRACT

Weather-resistant charcoal bags are formed from a woven thermoplastic layer and optionally having a barrier film layer. The charcoal bags can also have a flat bottom for improved advertising.
WOVEN STORAGE BAG FOR CHARCOAL

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to bags of solid materials, especially charcoal briquet bags. The present invention also relates to solvent-resistant and weather-resistant charcoal bags formed from a woven thermoplastic layer and optionally having a barrier film layer. The charcoal bags can also have a flat bottom.

2. Description of the Related Art

Currently, charcoal bags containing briquets are generally made from paper or treated paper. Charcoal bags containing briquets and solvent for lighting are made from a barrier layer of nylon between two layers of paper. This multi-layer bag is expensive and the outer paper layer can deteriorate under weather or handling conditions and become unattractive to the consumer.

U.S. Pat. App. 2005/0178051 to Hoong describes a package for solid BBQ fuels having two compartments where in one embodiment the smaller compartment stores starter charcoal for quicker ignition. U.S. Pat. App. 2006/0156621 to Kraus et al. describes a bag for charcoal briquets having an interior space for storing fire starter. U.S. Pat. No. 4,101,292 to Hogan I describes a combustible package for charcoal briquets containing an interior bag with briquets and an inert gas, an exterior paper covering impregnated with flammable liquid, and then sealed in a plastic bag. U.S. Pat. No. 5,626,636 to Carter describes a combustible bag for charcoal having an inner liner covered with combustible material, an outer liner covered with combustible material, and a lighting strip for lighting the outer liner. U.S. Pat. App. 2003/0079400 to Weissman et al. describes a combustible wood-based package with an inner wrapper for small wood particles and an outer wrapper containing larger wood pieces and the inner wrapper.

U.S. Pat. No. 4,861,362 to Caggiano describes a laminated bag having an outer water impenetrable layer, a middle absorbent layer and an inner perforated moisture pervious layer. U.S. Pat. No. 4,646,467 to Morrissou describes a weather resistant multi-layer cover for dormant plants having air space between layers. PCT App. WO96/22282 to Vadinar describes a bag having at least four film layers.

To overcome these problems of the prior art, charcoal bags of the present invention are designed for weather resistance and for an inexpensive barrier layer to solvent transmission.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing aspects and others will be readily appreciated by the skilled artisan from the following description of illustrative embodiments when read in conjunction with the accompanying drawings, wherein:

FIG. 1 is a perspective view of one embodiment of the invention;
FIG. 2 is a perspective view of one embodiment of the invention;
FIG. 3 is a bottom plan view of the aspect of the invention shown in FIG. 2;
FIG. 4 is a cross-sectional view of one embodiment of the invention; and
FIG. 5 is a perspective view of one embodiment of the invention.

SUMMARY OF THE INVENTION

In accordance with the above objects and those that will be mentioned and will become apparent below, one aspect of the present invention comprises a weather resistant charcoal bag comprising charcoal contained within the bag; and walls of the bag comprising a woven layer of thermoplastic material and a film layer of thermoplastic material; wherein the woven layer and the film layer are laminated together.

In accordance with the above objects and those that will be mentioned and will become apparent below, another aspect of the present invention comprises a weather resistant charcoal bag comprising charcoal contained within the bag; and walls of the bag comprising a woven layer of thermoplastic material and a film layer of thermoplastic material.

In accordance with the above objects and those that will be mentioned and will become apparent below, another aspect of the present invention comprises weather resistant charcoal bag comprising charcoal contained within the bag; and walls of the bag comprising a woven layer of thermoplastic material; wherein the bag has a flat bottom.

DETAILED DESCRIPTION OF THE INVENTION

Before describing the present invention in detail, it is to be understood that this invention is not limited to particularly exemplified systems that may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments of the invention only, and is not intended to limit the scope of the invention in any manner.

All publications, patents and patent applications cited herein, whether supra or infra, are hereby incorporated by reference in their entirety to the same extent as if each individual publication, patent or patent application was specifically and individually indicated to be incorporated by reference. The citation of any document is not to be construed as an admission that it is prior art with respect to the present invention.

As used herein, forms of the words “comprise”, “have”, and “include” are legally equivalent and open-ended
and do not exclude additional unrecited elements, compositional components, or method steps. Accordingly, the term “comprising” encompasses the more restrictive terms consisting essentially of” and “consisting of”.

[0022] It must be noted that, as used in this specification and the appended claims, the singular forms “a,” “an” and “the” include plural referents unless the context clearly dictates otherwise. Thus, for example, reference to a “surfactant” includes two or more such surfactants.

[0023] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which the invention pertains. Although a number of methods and materials similar or equivalent to those described herein can be used in the practice of the present invention, only exemplar materials and methods are described herein.

[0024] In the application, effective amounts are generally those amounts listed as the ranges or levels of ingredients in the descriptions, which follow hereto. All percentages, ratios and proportions are by weight, and all temperatures are in degrees Celsius (°C), unless otherwise specified. All measurements are in SI units, unless otherwise specified. Unless otherwise stated, amounts listed in percentage (“%”) are in weight percent (based on 100% active) of the cleaning composition alone. It should be understood that every limit given throughout this specification will include every lower, or higher limit, as the case may be, as if such lower or higher limit was expressly written herein. Every range given throughout this specification will include every narrower range that falls within such broader range, as if such narrower ranges were all expressly written herein.

[0025] The term “plastic” is defined herein as any polymeric material that is capable of being shaped or molded, with or without the application of heat. The term “thermoplastic” is defined herein as a high polymer that softens when exposed to heat and returns to its original condition when cooled. Usually plastics are homo-polymers or co-polymers of high molecular weight. Plastics fitting this definition include, but are not limited to, polyolefins, polsters, nylon, vinyl, acrylic, polycarbonates, polystyrene, and polyurethane.

Storage Bag

[0026] FIG. 1 is a perspective view of a one embodiment of the invention. The bag 10 in FIG. 1 is designed to safely contain any entrapped material, typically the bag will be liquid resistant or liquid impermeable. The bag is designed of sufficient strength to resist rupturing in use. According to the present invention, depending on the shape of the bag 10 required, the bag may be made from a unitary piece of material or from a number of separate pieces of material, that may be identical or different and that are sealed at their respective peripheries. The bag 10 has a front wall 11, a back wall (not shown), side walls 12, a top flap 13 having a sewn closure 14, and a bottom 15. FIG. 2 is a perspective view of a one embodiment of the invention. The bag 20 in FIG. 2 has a tape closure 21 and a flat bottom 22. FIG. 3 is a bottom plan view of the bag shown in FIG. 2 showing the flat bottom 22.

[0027] According to the present invention the bag itself can comprise one or multiple layers. FIG. 4 is a cross-sectional view of the bag 20 in FIG. 2 along the line A-A. The bag 20 has an outer layer 40 and an inner layer 41. For a bag of multiple layers, the layer on the inside of the bag, that will typically at least partially come in contact with the contents of the bag is called the inner layer 41. The outermost layer of the bag, that will come in contact with the outdoor environment, is called the outer layer 40. There may additionally be one or more interposed layers (not shown) between the inner layer 41 and the outer layer 40.

[0028] In one suitable embodiment of the present invention the bag comprises one layer of woven thermoplastic material. A suitable woven material is a polyolefin, such as polyethylene (PE), propylene (PP), or polyester (PET), such as that available from Mayur Wovens in India. A suitable material for the woven layer is a polypropylene layer having a gauge of 50 to 70 gauge (or 0.5 to 0.7 mil), or 70 to 120 gauge (or 0.7 to 1.2 mil), or 50 to 120 gauge (or 0.5 to 1.2 mil).

[0029] In another suitable embodiment of the present invention the bag comprises a laminate of two layers. In one embodiment, a film layer is extruded onto a woven layer. In one embodiment, a film layer and a woven layer are adhesively bonded. Suitably the inner layer 41 comprises a woven layer and the outer layer 40 comprises a polymer film. The polymer film, when bonded to the inner layer 41 will increase the strength, barrier properties, and storage stability of the inner layer 41. Charcoal briquets are abrasive. Therefore, the puncture resistance performance for the woven bag is important. For a bag consisting only of plastic film or a laminate of multiple films, it may require at least 3 mil of PET or greater thickness of PE to be able to provide sufficient abrasion resistance. A PP-oriented filament woven bag of 0.5 to 0.7 mil may have sufficient abrasion resistance with or without a 0.5 to 1.2 mil PE film laminated to the woven layer for barrier properties. The total bag thickness might be 1.0 to 2.5 mil, or 1.5 to 2.5 mil, or 1.5 to 2.0 mil. This would be significantly thinner than a film or laminated film bag.

[0030] The laminated woven bag structure should also have provide a moisture barrier. The paper bag is a porous structure, therefore it allows the contents to release its moisture content out of the package or for environmental moisture to enter the package. For an absorbent product such as cat litter, the moisture barrier requirement becomes very important since as moisture enters the bag, the contents become less absorbent and may even clump.

[0031] The film may be printed on the outside exterior surface or the interior surface contacting an inner layer 41. Where the printing is on the interior surface of a transparent or translucent film layer, such as with reverse printing, the product may have additional weather resistance.

[0032] Suitable film materials comprise a thermoplastic material. Such materials include films of polyethylene, propylene including oriented polypropylene, poly(ethylene terephthalate) such as Mylar polyesters, nylon, ionomer resin such as Surllyn ionomer resins, polyester, and all types of hot-melt adhesives.

[0033] The laminate can be formed by means known to those skilled in the art, for example by adhesive bonding or coextrusion. Examples of useful adhesives include wax/polymer blends, polyethylene, propylene, polyvinylidene chloride, polyethylene acrylic acid, polyester, polyisobutylene, nylon, polymethylpentene, ethylene vinyl acetate, and copolymers thereof. Also useful are hot-melt adhesives, and wax/polymer blends.

[0034] Optionally, one or more of the layers can include a coloring agent to provide a transparent, or an opaque colored wrap material to mask the product contained within. Examples of coloring agents that will impart a transparent coloring effect include organic pigments such as a monazo pigment (Lake Red C, Nickel Azo Yellow), a diazo pigment...
Benzidine Yellow), phthalocyanine pigments, and fluorescent pigments, among others. Coloring agents that will impart opacity include, for example, inorganic pigments such as titanium dioxide or barium sulfate (white), a metallic oxide pigment such as an iron oxide, zinc oxide or chromium oxide greens, ultramarine pigments, cadmium pigments, and pearl- escent pigments, among others. A thin layer of metal can also be used as a pigment coating.

Flat Bottom

[0035] One aspect of the invention is a bag with a self-supporting, flat bottom. The bags can have a generally flat bottom 22 as shown in FIG. 2 and FIG. 3. Methods of folding flat bottom bags are described in U.S. Pat. No. 6,991,592. The flat bottom 22 enables the bags to be stacked on the back wall for additional weather resistance while allowing the flat bot- tom 22 to protrude from the side of a storage pallet, thus providing a visible flat surface for labeling and consumer recognition, as shown in FIG. 5. In one embodiment, the flat bottom 22 contains indicia 31 indicating the source of the charcoal briquettes, as shown in FIG. 3 and FIG. 5. The side on the bag can contain additional indicia 32 so that a pallet of bags as shown in FIG. 5 shows multiple facings of the bag bottom indicia 31 and side indicia 32.

[0036] When the bag has a flat bottom 22, then both the bottom and the side, front, and back walls of the bag may be printed with indicia including messages, information and marketing indicia. If so desired, a bag with a round or gus- seted bottom 15 as in FIG. 1 could also be used.

Closure

[0037] In one embodiment as shown in FIG. 1, the bag 10 has a closure 14 on the top flap 13. To open the bag, the user removes the closure 14 from the top flap 13, so that the user may pour contents of the bag through the bag opening (not shown). In one embodiment, the closure is a sewn tape 14 (FIG. 1) that is pulled off. In one embodiment, the closure is an adhesive tape 21 (FIG. 2) that is pulled off. In one embodi- ment, the closure is formed by adhesively sealing or heat sealing the top flap 13. The closure may additionally have a tape or perforations to allow easier opening of the closure. In one embodiment, the closure can be resealed. Examples of resealing closures are adhesively resealing or mechanically resealing closures, such as a zipper mechanism or slider, such as described in U.S. Pat. No. 6,981,936 to Plourde et al. In this embodiment, the user slides the closure to an open position rather than tearing along a line of weakness. The bag can then be re-sealed by sliding the closure to a shut position.

Uses

[0038] The storage bag may contain any of a variety of solid fuel sources for use by household consumers. In one embodi- ment, the storage bag contains charcoal briquettes, as described in U.S. Pat. App. 2002/0189459 to Sprules et al. and U.S. Pat. No. 4,857,774 to Fay III et al. The storage bag may also contain other solid materials, such as consumer products including cat litter.

[0039] The woven thermoplastic storage bag is weather resistant which can allow outdoor storage, such as at retailers or with consumers. An example at retailers would be a pallet of bags stored in front of the retail store. The pallet would allow for better retail visibility for special promotions. In one example, pallets of charcoal briquet bags could be promoted outside a retail establishment along side charcoal grills for sale or food being prepared for tasting or sale. For consumers, there are also advantages to outdoor storage. The consumer may want to store the bag of charcoal briquet next to the charcoal grill.

[0040] While this detailed description includes specific examples according to the invention, those skilled in the art will appreciate that there are many variations of these examples that would nevertheless fall within the general scope of the invention and for which protection is sought in the appended claims.

What is claimed is:

1. A weather resistant charcoal bag comprising:
   a. charcoal contained within the bag; and
   b. walls of the bag comprising a woven layer of thermoplastic material and a film layer of thermoplastic material;
   c. wherein the woven layer and the film layer are laminated together.

2. The bag of claim 1, wherein the woven layer is polypropylene.

3. The bag of claim 1, wherein the woven layer is polyester.

4. The bag of claim 1, wherein the woven layer is polyethylene.

5. The bag of claim 1, wherein the film layer is extruded onto the woven layer.

6. The bag of claim 1, wherein the film layer and the woven layer are adhesively bonded.

7. The bag of claim 1, wherein the bag has a sewn closure.

8. The bag of claim 1, wherein the bag has a tape closure.

9. The bag of claim 1, wherein the second film layer has printing on the interior surface of the film layer.

10. The bag of claim 1, wherein the woven layer is the interior layer and the film layer is the exterior layer.

11. A weather resistant charcoal bag comprising:
   a. charcoal contained within the bag;
   b. a flammable solvent material contained within the bag; and
   c. walls of the bag comprising a woven layer of thermoplastic material and a film layer of thermoplastic material.

12. The bag of claim 11, wherein the woven layer is polypropylene.

13. The bag of claim 11, wherein the woven layer woven layer is polyester.

14. The bag of claim 11, wherein the woven layer is polyethylene.

15. The bag of claim 11, wherein the film layer has printing on the interior surface of the film.

16. A weather resistant charcoal bag comprising:
   a. charcoal contained within the bag; and
   b. walls of the bag comprising a woven layer of thermoplastic material.

17. The bag of claim 16, wherein the bag has a flat bottom.

18. The bag of claim 17, wherein the flat bottom contains indicia indicating the source of the charcoal.

19. The bag of claim 16, wherein the bag has a sewn closure.

20. The bag of claim 16, wherein the bag has a tape closure.

21. The bag of claim 16, wherein the bag is part of a pallet of bags with each bag stacked on its back wall.

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