ABSORBENT COASTER INSERT

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Appl. No.: 12/027,058
Filed: Feb. 6, 2008

Related U.S. Application Data
Provisional application No. 60/899,844, filed on Feb. 6, 2007.

Publication Classification
Int. Cl. A47G 23/02 (2006.01)
U.S. Cl. 248/346.11

ABSTRACT
An absorbent coaster article for insertion into a cup holder that comprises an inner material including one or more layers of a superabsorbent polymeric material, such as a polypropylene microfiber fabric, that is enclosed by a protective outer covering comprising a fabric material effective for the passage of liquids therethrough to be absorbed by the superabsorbent inner material. The outer covering may be sewn to form an inner pocket containing the inner material, or the insert may include an outer ring member joining two halves of the outer material and/or to provide a means to grasp or shape the insert. The coaster article may further include a base member to hold the removable insert and protect the underlying surface from excess moisture.
ABSORBENT COASTER INSERT

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Application Ser. No. 60/899,844, filed on Feb. 6, 2007, the disclosure of which is hereby incorporated into this disclosure in its entirety.

FIELD OF THE INVENTION

[0002] This invention relates to absorbent articles, more particularly to coaster inserts.

BACKGROUND

[0003] The problem of excess moisture from condensation, drips, or spillage associated with the use of a personal beverage container, such as a drinking glass or cup, mug, bottle, can, etc., has been addressed in different ways, depending on the importance of collecting the moisture or protecting the underlying surface. Reusable coasters, which are typically made of wood, ceramic, metal, plastic, or other durable materials, are most often used to provide a protective function to underlying surfaces, such as to keep moisture and/or heat from damaging or staining table surfaces, counter tops, etc., or speed clean up of surfaces by intercepting drips or spillage. While some coaster materials, such as absorbent stone, cork, fabric, etc. are able to absorb excess moisture, they are limited in their ability to fulfill this function. Non-absorbent coasters, or those with limited absorbency, can allow the excess moisture to accumulate about the bottom of the container where it may be accidentally transferred to an unwanted surface, such as clothing or the surface that the coaster is intended to protect. This can especially be a problem in cup holders, such as those found in vehicles, where moisture tends to pool in the bottom of the holder, particularly if it lacks a means for drainage.

[0004] To combat the problem of excess moisture on underlying surfaces, the best strategy is usually to place a highly absorbent material underneath the container, cocktail napkins being one common example. Of course, absorbent articles, such as napkins or paper coasters made of cellulose fiber, are intended to be disposable items and must be frequently replaced, particularly because of their lack of durability when wetted. Woven fabrics are generally much more durable and reusable than paper products, but the ability of the individual fibers to rapidly uptake and hold fluid is somewhat less than cellulose, making them less than ideal for that purpose. Even if sufficient to absorb the amount of excess fluid on or from the container, tissue, paper, and fabrics can retain fluid for an extended period of time which can cause the bottom of the container to remain moist continually. Thus, an accidental transfer of that moisture to another surface can remain a possibility until adequate evaporation of the excess moisture has taken place.

[0005] What is needed is a coaster or cup holder insert that comprises a highly absorbent material to remove moisture away from the beverage container and the adjacent area, but has sufficient durability such that it can be reused repeatedly without degradation of performance and appearance.

SUMMARY OF THE INVENTION

[0006] The foregoing problems are solved and a technical advance is achieved in an illustrative absorbent article, such as a removable and reusable insert for use in a cup holder, that comprises an absorbent inner portion or material and an outer covering that encloses the inner portion, the inner material comprising a superabsorbent polymer fiber material engineered for rapid uptake and retention of excess fluid from a beverage container, an example being multiple layers of a polypropylene microfiber mesh configured to hold many times its weight in fluid. Other materials include polyearylate fibers, polyacrylic acid, and other synthetics, which may also be used in combination with other types of fibers, such as cellulose to more rapidly absorb and retain fluids than natural fibers or traditional woven and non-woven fabric blends. To increase the durability and acceptance of the article by consumers, the outer covering preferably comprises a woven or knitted fabric (e.g. terry cloth, fleece, alova suede, etc.) that is effective in allowing the liquid to pass through the fabric for uptake by the first inner material. The outer covering may optionally include one or more decorative features, such as an insignia, logo, or other decorative matter that is imprinted, embroidered, or otherwise added thereto. To form the outer covering, one or more pieces of the woven or knitted material, such as top and bottom portions of a generally circular configuration may be sewn or otherwise attached to one another to form an inner pocket in which the inner material is disposed. Alternatively, the top and bottom portions may separately attach to an outer member, such as an outer ring element, that may facilitate manipulation of the insert, provide shape, and/or provide decorative value thereto.

[0007] In another aspect of the invention, the absorbent article further includes a base member that comprises a recessed portion for receiving the absorbent article as a removable or permanent insert. The base member is preferably configured to provide a protective function to underlying surfaces and to serve as a barrier against the moisture taken up by the absorbent article.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Embodiments of the present invention will now be described by way of example with reference to the accompanying drawings, in which:

[0009] FIG. 1 depicts a perspective view of an illustrative embodiment of the present invention with the inner material exposed.

[0010] FIG. 2 depicts a cross-sectional view of the embodiment of FIG. 1.

[0011] FIG. 3 depicts an exploded view of the illustrative embodiment of FIG. 1 being used within a cup holder.

[0012] FIG. 4 depicts the embodiment of FIG. 1 being inserted into a base member.

[0013] FIG. 5 depicts a side view of an embodiment of the present invention further comprising an outer ring element.

DETAILED DESCRIPTION

[0014] For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiments illustrated in the drawings, and specific language will be used to describe the same. It should nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates. Any other undisclosed
or incidental details of the construction or composition of the various elements of the disclosed embodiment of the present invention are not believed to be critical to the achievement of the advantages of the present invention, so long as the elements possess the attributes needed for them to perform as disclosed. The selection of these and other details of construction are believed to be well within the ability of one of even rudimentary skills in this area, in view of the present disclosure. The invention encompasses embodiments both comprising and consisting of the elements described with reference to the illustrative embodiments. Unless otherwise indicated, all ordinary words and terms used herein shall take their customary meaning as defined in The New Shorter Oxford English Dictionary, 1993 edition. All technical terms shall take on their customary meaning as established by the appropriate technical discipline utilized by those normally skilled in that particular art area.

[0015] The present invention, as embodied in FIGS. 1-5, comprises an absorbent article 10 that is suitable for being removably inserted into a receiving member 16, such as a cup holder 17, base member 18, etc., to collect excess moisture 24 from a beverage container 23 or other object capable of shedding absorbable liquids, melted foodstuffs, etc. The absorbent article 10 of the present invention comprises a first inner material 11, typically a plurality of layers thereof, that has superabsorbent properties such that the inner material is and is engineered to be significantly more absorbent than standard materials having inherent absorptive properties, such as cotton, cellulose, etc., and thus, can take up many times its weight in liquids. As defined herein, a polymer fiber material is considered superabsorbent if it can absorb at least 10-15 times its own weight in water, whether the water or other fluid is actually absorbed by the individual fibers of the material or the droplets adhere thereto.

[0016] The superabsorbent inner material 11 is surrounded and enclosed by a second outer material 12 that is selected to facilitate passage of liquids therethrough for uptake by the inner material, as well as to provide a more durable and more aesthetically appealing article than if the inner material would be used alone. The advantageously increases the suitability of the present absorbent article 10 as a reusable coaster insert, rather than one more appropriate to function as a disposable item. As depicted in FIG. 4, the outer material may include one or more decorative features 26 that are either incorporated into the fabric prior to manufacture, or are imprinted thereon afterward, such as by screen printing (e.g. dye sublimation). The decorative feature(s) may also be sewn or otherwise applied to the surface, although it is preferably that the decorative feature not be configured such that it significantly interferes with fluid uptake by the absorbent article 10.

[0017] FIGS. 1-2 depict an illustrative embodiment of the present invention in which the outer material 12 comprises a generally circular top portion 20 and a corresponding bottom portion 21 that are sewn together along a seam 15 to form a internal pocket 14 into which the superabsorbent inner material 11 is inserted before the seam is completed to fully enclose the inner material. One preferred outer material is terrycloth (e.g., material used in towels), which typically comprises a cotton and polyester blend having a plurality of loops 22 extending from the fabric surface, making it particularly effective in the rapid uptake of liquids in which it comes into contact. Other woven or knitted fabrics may be used as an outer material, such as fleece, cotton, etc., particularly those that lack a chemical fabric treatment that might otherwise interfere with the uptake or passage of liquids therethrough. While the terrycloth outer material of the illustrative embodiment has inherent absorptive properties, it is particularly effective in allowing the excess moisture coming in contact with its surface to rapidly permeate therethrough so that it can be absorbed by the inner material below that is much better adapted to uptake and hold excess liquid than ordinary fiber materials. Typically fabrics with low thread counts and larger spaces between threads may allow better fluid permeation, depending on the fabric type. Unlike most highly absorbent articles that are designed to be discarded after they become soaked with excess liquid, the present invention is configured such that the liquid eventually evaporates therefrom without causing structural degradation or alteration of the absorptive materials such that it can return to its original condition for multiple or continued reuse. Alowa suede is another commonly available fabric that is particularly suitable as an outer material. This lightweight 100% polyester fabric has a smooth surface and superior wicking properties to facilitate uptake of fluids into superabsorbent inner material.

[0018] The superabsorbent inner material 12 of the present invention preferably comprises a non-woven mesh of polymeric fibers, such as microfibers, or a combination of polymeric and absorbive natural fibers that are engineered and configured to absorb many times the weight of the material in liquid. One skilled in the art would appreciate that there are a number of polymer fiber materials that have been primarily developed for industrial use, typically in towel or pad form, for rapid cleanup or interception of chemical spills, excess water, etc. One such material of particular utility is a small micron diameter polypropylene fabric sold under the trade-name SPILEYTER® (G Series) Sorbents (Interstate Products, Inc., Sarasota Fla.). The material is available as a single or a double weight sheet and is able to absorb up to 16 times its own weight by having the droplets of liquid “adhere” to the fine fibers within the non-woven mesh and within the spaces therebetween due in part to the addition of a surfactant to the hydrophobic microfibers. This advantageously allows for effective evaporation of the moisture from the material after uptake so that it returns to its original condition to be available for absorbing further spills or excess moisture. In the illustrative embodiment, a plurality of individual layers of the polypropylene fabric is used to produce a particular overall thickness (typically 2-8 mm uncompressed), depending on the level of absorptive capacity desired and the thickness of the individual fabric layers.

[0019] Polypropylene fibers can be combined with other fibers to produce a suitable inner material having enhanced absorptive capacity. Examples include some members of the WYPALL® Products family (Kimberly-Clark Corporation, Neenah, Wis.), such as HYDROKNIT® Fast Absorbing Material (e.g., products X50, X60, X70, and X80) in which spunbond polypropylene fibers are entangled with cellulose pulp fibers using water jets. The resulting material is both durable and highly absorbent. An alternative type of superabsorbent polymer fiber material is one in which the individual hydrophilic fibers ‘wick’ the moisture and swell to many times their original diameter, essentially turning the polymer of the fiber into a gel. An example of such a superabsorbent polymer is polyacrylate fiber, which may be combined with hydrophobic polypropylene fiber for strength. Polyacrylate fiber, typically used as a component of diaper material, is a very effective superabsorbent material, but it may be somewhat less effective in its ability to dehydrate and return to its
original state for subsequent reuse than a surfactant-treated polypropylene fabric material. Absorbent materials that are designed primarily for one-time use are generally less preferred to those that are able to retain their strength and/or structural integrity during repeated soakings.

**FIG. 3** depicts the use of the illustrative embodiment of **FIG. 1** as an insert within a cup holder 17 of the type typically found in a vehicle. The absorbent article 10 is advantageously bendable without resulting in permanent deformation thereto, thereby allowing the insert to be easily insertable and removable from the receiving area 16 of the cup holder 17. The absorbent article 10 may be left in place after it has become partially or fully charged with excess moisture to gradually dehydrate from evaporation, or it may be removed after use to be cleaned/laundred and/or to further assist the drying process, if so desired. In a preferred configuration, the fabric and superabsorbent inner material are selected so that the absorbent article comprises a configuration that allows it to be effectively compressed (squeezed) by hand to wring out excess moisture, particularly if the article is saturated with liquid.

**[0020]** The absorbent article insert 10 may comprise any diameter suitable for the desired application but, typically, an outer diameter in the range of 2.5 to 3.5” is preferred for use within a standard cup holder. In the embodiment depicted in **FIG. 4**, the absorbent article 10 further includes its own base member 18 having a receiving area 16 for the insert portion, thereby allowing the absorbent article insert 10 to be sized thereto, which is advantageous to accommodate a typical or particular type of beverage container, including oversized beverage containers. The illustrative base member may comprise any suitable material or configuration, such as wood, metal, plastic, etc., and may provide a utilitarian benefit, such as protecting the underlying surface from moisture captured by the absorbent article, and/or a decorative function.

**[0021]** An alternative embodiment of the absorbent article 10 of the present invention is depicted in **FIG. 5** in which the top portion 20 of the outer member 12 and the bottom portion 21 thereof are at least partly joined together by an outer member 27, such as the illustrative outer ring element, that typically comprises a rigid material, such as metal or plastic, or a semi-rigid material. The outer member may provide one or more of several functions, including providing a convenient means to grasp the article, providing a regular shape to the article, or as a decorative feature, in addition to possibly providing an alternate or additional means to join the upper and lower halves of material. In a related embodiment, the outer member 27 may comprise two interlocking pieces or halves (not shown) so that the top portion 20, which would be attached to one interlocking piece, could be separated from the bottom portion 21, which would be attached only to the second interlocking piece of the outer member 27, if so desired, to gain access to the inner material (e.g. to replace it) or to separately clean or launder the different components of the absorbent article 10. In addition, the outer ring element 27 may be configured to releasably or permanently engage the receiving portion 16 of the base member 18 so that the insert portion cannot be easily dislodged, such as when the absorbent article 10 is tilted or turned over. It is also within the concept of the invention for the absorbent article 10 to be used as a stand-alone coaster instead of an insert, an example being the embodiment of **FIG. 5**, whereby the bottom portion 21 of the outer material 12 comprises a non-absorbent (e.g., waterproof) material that does not permit the excess moisture taken up by the inner material to soak through to the underlying surface. Or, the absorbent article may include a separate layer of suitable barrier material (not shown) that extends underneath the fabric bottom portion 21 and attaches about the region where the top and bottom portions join, such as to the illustrative outer ring element 27.

**[0023]** It is therefore intended that the foregoing detailed description be regarded as illustrative rather than limiting, and that it be understood that it is the following claims, including all equivalents, that are intended to define the spirit and scope of this invention.

What is claimed:

1. A reusable absorbent article sized and configured to be removably inserted into a cup holder to collect excess moisture from a beverage container placed therein, comprising:

   an inner material comprising polymeric fiber, wherein the inner material is configured to be superabsorbent to liquids; and

   an outer covering comprising a woven or knitted fabric that encloses the inner material therein, the outer covering effective for passage of liquid therethrough such that the liquid is rapidly absorbed by the inner material.

2. The absorbent article of claim 1, wherein the first material comprises a plurality of layers of the inner material.

3. The absorbent article of claim 1, wherein the inner material comprises polypropylene fabric.

4. The absorbent article of claim 1, wherein the inner material comprises polyacrylic acid.

5. The absorbent article of claim 1, wherein the outer covering fabric comprises a woven blend of cotton and synthetic fibers.

6. The absorbent article of claim 1, wherein the outer covering comprises terry cloth fabric.

7. The absorbent article of claim 1, wherein the outer covering comprises alova suede fabric.

8. The absorbent article of claim 1 further including the cup holder, wherein the cup holder comprises a recessed portion sized to receive the absorbent article therein.

9. A reusable absorbent article sized and configured to be removably inserted into a cup holder to collect excess moisture from a beverage container placed therein, comprising:

   an inner material comprising one or more layers of polypropylene fabric configured to be superabsorbent to liquids; and

   a durable outer covering comprising a woven or knitted fabric that encloses the inner material therein, the outer covering effective for passage of liquid therethrough such that the liquid is rapidly absorbed by the inner material.

10. The absorbent article of claim 9 wherein the polypropylene fabric comprises a non-woven mesh of microfibers.

11. The absorbent article of claim 9 wherein the polypropylene fabric of claim 9 is treated with a surfactant agent.

12. The absorbent article of claim 9 wherein the polypropylene fabric further includes polyacrylate fibers.

13. The absorbent article of claim 9, wherein the outer covering fabric comprises a woven blend of cotton and synthetic fibers.

14. The absorbent article of claim 9, wherein the outer covering comprises terry cloth fabric.

15. The absorbent article of claim 9, wherein the outer covering comprises alova suede fabric.

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