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(54) **RELEASE AGENT FOR SCENTED ADDITIVES**

(75) Inventor: **Benoit Portier**, Bourges (FR)

Correspondence Address:
SCOTT R. COX
LYNCH, COX, GILMAN & MAHAN, P.S.C.
500 WEST JEFFERSON STREET, SUITE 2100
LOUISVILLE, KY 40202 (US)

(73) Assignee: **AIRSEC**, Choisy Le Roi (FR)

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(57) **ABSTRACT**

A multifunctional vessel which includes a moisture control material containing a scented additive placed within the vessel. The moisture control material preferably comprises silica gel or bentonite clay into which a scented additive has been absorbed. The moisture control material containing the scented additive can be placed in a separate canister or sachet within the vessel. The moisture control material with scented additive regulates the relative humidity within the vessel while giving off the odor of the scented additive.

RELEASE AGENT FOR SCENTED ADDITIVES

BACKGROUND OF INVENTION

[0001] One embodiment of the invention relates to multifunctional vessels, such as pharmaceutical or nutraceutical vessels, containing a release agent for a scented material, which may be placed within or secured within the multifunctional vessel. Another embodiment of the invention relates to vessels for holding commercial products that require the maintenance of a relatively low humidity level within the vessel, and can be enhanced by the presence of a particular scent within the vessel. Another embodiment is a vessel for holding commercial products containing a release agent for scenting which assists in maintaining a low moisture level within the vessel and also contains a method for determining when the moisture level within the vessel exceeds a predetermined level. A further embodiment is a packet containing a release agent for scenting placed or secured in a room in a residential or commercial facility, which assists in maintaining a low moisture level within the room while at the same time releasing a desirable scent into the room.

[0002] Some products which are packaged in conventional vessels, such as conventional glass or plastic bottles, have an unpleasant and/or unappetizing odor. An example is the odor produced by fish oil capsules. In current practice, the odor of these products may escape from the vessel, thereby creating an unpleasant environment. In other situations the products are enhanced when particular scents are present in the vessels.

[0003] The use of scented oils with selected plastic materials is known for certain limited applications. For example, U.S. Pat. No. 3,553,296 discloses a process for manufacturing a scented polyolefin that may have utility as an artificial flower, in the cosmetic industry or for the preparation of garbage bags. A method of providing scent to a product vessel by entrapping scented oil within a polymer matrix within the vessel, wherein the vessel is comprised of a material which is incompatible with the scented oil, is disclosed in U.S. Pat. No. 4,540,721.

[0004] In addition, there are products which require the maintenance of controlled levels of relative humidity within vessels. These products may include pharmaceutical products, dental products and various consumer products. These products require the regulation of moisture within the vessel in which they are shipped.

[0005] In addition, many products exist which release scents into a room.

[0006] Further, many vessels for products contain materials that adsorb humidity within the vessel, such as silica gel.

[0007] In addition, some products degrade when they are exposed to gases, such as oxygen or ethylene, for extended periods of time. Reduced levels of those gases within the vessels for those products may be difficult to maintain once the vessel has been opened. To address these problems a gas absorbing material can be placed within the vessel. One particularly useful gas absorber is an oxygen absorber.

[0008] Notwithstanding the examples of the use of scented plastic materials, moisture absorbers, and oxygen absorbers, the concept of preparing a multifunctional vessel or packet containing a moisture control material which also functions as a source of scent has not been disclosed. Further, incorporation of a scent imparting material as a component of a multifunctional vessel or packet for use within vessels that also requires the retention of a relatively low humidity has not

been disclosed. Further, the presence of a scent imparting material that also can regulate the level of moisture within a vessel or within a room and provide a method to indicate when the level of moisture is too high has also not been disclosed. Such products show great utility for solving multiple problems that exist with various types of products placed within conventional vessels.

[0009] These and other objects are obtained by the composition, process for the preparation of the composition and process of use of the composition.

SUMMARY OF THE INVENTION

[0010] One embodiment of the invention includes a multifunctional vessel containing a release agent for a scented material placed within the multifunctional vessel.

[0011] Another embodiment of the invention includes a multifunctional vessel containing a moisture control material containing a scented material, which is placed within the multifunctional vessel.

[0012] Another embodiment of the invention includes a multifunctional vessel containing a moisture control material containing a scented material, wherein the moisture control material containing a scented material provides an indication when the relative humidity level within the vessel exceeds a predetermined level.

[0013] Another embodiment of the invention includes a packet containing a moisture control material containing a scented material, wherein the packet can be used in commercial or residential applications.

[0014] Another embodiment of the invention includes a multifunctional vessel containing the moisture control mechanism containing a scented material, wherein the vessel also contains at least one gas absorber, such as an oxygen absorber.

[0015] Other embodiments of the invention include a method for production and use of the multifunctional vessels described above.

DETAILED DESCRIPTION OF THE INVENTION

[0016] In one embodiment, the invention comprises a multifunctional vessel useful for holding a variety of products, such as pharmaceuticals, nutraceuticals, or other commercial products, or for use in a residential or commercial room, which vessel contains a release agent for a scented material, preferably a moisture control material containing a scented material, wherein the moisture control material containing the scented material is located within or is secured within the multifunctional vessel and wherein the moisture control material containing a scented material is preferably contained in a canister, sachet, perforated container or container enclosed by a permeable membrane placed within or secured within the vessel.

[0017] In one embodiment the multifunctional vessel comprises a conventional vessel manufactured from conventional materials, such as plastic or glass. Placed within this vessel is the release agent containing the scented material, preferably a moisture control material containing a scented material.

[0018] In one preferred embodiment the release agent, preferably a moisture control material containing a scented additive, provides a mechanism for controlling or minimizing the relative humidity in a closed environment, such as a vessel or container for commercial products, or within a commercial or residential room. The moisture control material containing

a scented additive can be placed within any form of container, such as a permeable canister, sachet, packet or other plastic body which may be sealed except for a port, a series of openings or a permeable covering which permits the materials contained within that container to assist in the regulation of relative humidity within the multifunctional vessel and also provides for scent to escape the container.

[0019] The moisture control material containing a scented additive can also be placed within a room, either commercial or residential.

[0020] In one preferred embodiment the moisture control material containing the scented additive is contained within a canister. These canisters can be formed from any conventional plastic materials. In this embodiment the moisture control material containing a scented additive is placed within the canister to segregate the moisture control material from products contained within the multifunctional vessel. Openings are provided in the canister or a permeable membrane surrounds the canister to permit the moisture control material to assist in the control of moisture within the multifunctional vessel and for release of the scent from the canister.

[0021] The moisture control material, to which a scented additive is added, preferably comprises materials that absorb moisture, including but not limited to bentonite clay, silica gel, montmorillonite clay, molecular sieves, and mixtures thereof.

[0022] In one preferred embodiment, the moisture control material comprises silica gel and/or a bentonite clay. For example, silica gel is a porous, granular, chemically inert, amorphous form of silicon dioxide which is capable of absorbing and desorbing water vapor in order to reach equilibrium with the surrounding environment. Silica gel has a long life span and continues to absorb or desorb moisture for an extended period of time. The particular type of silica gel that is selected can be determined by a person skilled in the art reviewing the particular desired environment of the vessel.

[0023] Prior to utilization of the silica gel or clay as the moisture control material, its level of saturation with humidity should be reduced to less than 5% of its maximum capacity, preferably, 1% or so of its maximum saturation capacity. Any procedure to produce silica gel or clay with the required level of saturation is within the embodiment of this disclosure.

[0024] The level of moisture within the vessel prior to introduction of the moisture control material should be less than 40% relative humidity and preferably less than 20% relative humidity.

[0025] Once the level of saturation of the silica gel or clay is set at the desired level, the silica gel or clay is treated with a concentrated solution of the scented material. The scent imparting material of the scented additive can be chosen from a large variety of aromatic or scenting materials. The scent imparting materials may be oil-soluble, as oil-soluble scented substances generally are readily absorbed by the pores of the moisture control material, preferably silica gel or clay. Alternatively, a water soluble scented substance may be used, if readily absorbed by the silica gel or clay materials. The concentration of the scent imparting materials within the pores of the silica gel or clay should be as high as possible. Further, the scented additives preferably have GRAS status, as recognized by the Flavoring Extract Manufactory Association. Any perfume essence, flavor or aromatic material may be incorporated into the moisture control substance. Although not wanting to be limited, particularly suitable oils or hydrated scents

can be chosen depending upon the designated use of the vessel by the consumer and the quantity of the scented additive that can be absorbed by the moisture control material, preferably silica gel or clay, such as a lemon oil, scented oils from flowers such as lilac, honeysuckle, rose or carnation, and other such oils or hydrated scents with GRAS status.

[0026] The quantity of the scenting material that can be used can be varied depending upon the particular application and the level of adsorption by the particular moisture control substance that is chosen. For example, when silica gel or clay is chosen, the quantity of the scenting material can be up to a maximum saturation of 40 wt % or so of the silica gel or clay material. In one preferred embodiment, the level of adsorption of the silica gel or clay is the maximum possible at ambient pressure and ambient temperature.

[0027] Besides providing a source of scent, another purpose of the moisture control material with the absorbed scented additive is to control the relative humidity within the vessel or room in which the moisture control material is placed. The relative humidity is controlled by the moisture control material absorbing excess moisture from the vessel or room when the moisture level exceeds the desired level inside the vessel or room.

[0028] In one embodiment, the atmosphere inside the multifunctional vessel is set at the desired humidity level at the time the release agent for scented additives is placed within the vessel, preferably 40% relative humidity and more preferably 20% relative humidity, and the vessel is sealed. As the contents within the vessel are used, the relative humidity level may increase depending on many factors, including how many times the vessel is opened and closed, the amount of moisture that leaks through the lid of the vessel, the permeability of the material of the vessel and the relative humidity level outside of the vessel.

[0029] The relative humidity within the vessel is controlled by the moisture control material and the relative humidity of the outside environment. The manufacturer of the vessel can attempt to control the level of the relative humidity within the vessel by choice of the particular moisture control material and its moisture adsorption capability.

[0030] In order for the moisture control material to maintain the relative humidity at the desired level within the vessel, it is necessary that the moisture control material be introduced into the vessel at a low enough relative humidity to assist in maintaining the level of relative humidity within the vessel. In addition, it is necessary that there be a sufficient quantity of the moisture control material present within the vessel to maintain the desired relative humidity.

[0031] In a preferred embodiment the release agent for scented additives comprises the moisture control material which has been saturated with a scented material. In a particularly preferred embodiment the moisture control material that has been saturated with the scented material comprises a silica gel and/or a clay which has been saturated with the scented additive, preferably a scent imparting material, as earlier described.

[0032] It has been surprisingly discovered that when silica gel and/or clays, which have been saturated with a scented additive, are placed within a vessel, the relative humidity within that vessel can be regulated because of the capacity of the silica gel or clay to adsorb moisture preferentially to the scented additive that has previously been absorbed by the silica gel. While not wanting to be bound by a particular theory, it is believed that moisture control materials, prefer-

ably silica gel or clay, preferentially desorbs the scented additive, such as the scent imparting materials described herein, while preferentially replacing that scent imparting material with moisture. The silica gel or clay with scented additive thus desorbs the scented additive and an aroma is created which is strong enough to be sensed by the consumer. It has been surprisingly discovered that the silica gel or clay with the scented additive continues to desorb the scented additive until the scented additive has been substantially replaced or completely replaced with moisture. At this point the aroma that is given off by the silica gel or clay is reduced or completely eliminated. By this feature, the consumer can determine that the silica gel or clay has absorbed moisture to its maximum capacity. At this time, the consumer can replace the silica gel or clay as it has become hydrated to a level that is no longer useful.

[0033] In use, the saturation of the moisture control material, preferably silica gel or clay, with water is established at a low level, preferably 1% or so saturation. The unsaturated or only minimally saturated moisture control material, preferably silica gel or clay, is then saturated with the chosen scented additive. The level of saturation of the scented additive can be adjusted, but preferably the moisture control material is fully saturated with the scented additive. When silica gel or a clay is used, the level of saturation preferably approaches 40% or so, by weight of the silica gel or clay. The moisture control material, which is saturated with the scented additive, is then placed within a container, such as a canister, and is then placed within the multifunctional vessel. Alternatively, the scented additive placed within a container is placed within a room in a residential or commercial facility. By the presence of this moisture control material with scented additive within the vessel or a room, multiple functionalities are achieved including regulation of the relative humidity within the vessel or room and the presence of a desired scent. In addition, as long as the moisture control material with scented additive continues to give off a scent, it still has not become fully hydrated. Thus, the relative humidity within the vessel can be regulated merely by the presence or absence of a scent within the environment in which it is used. However, as the level of scent is reduced or eliminated, this indicates that the moisture control material, preferably silica gel or a clay, has become saturated with moisture and has given off all or substantially all of the scented additive that was placed therein. This results in the necessity for replacement of the moisture control material.

[0034] Alternatively, the moisture control material with scented additive may be secured within a packet for use within a commercial or residential room.

[0035] Further, if desired, other functionalities can be added to the vessel including absorption of various gases,

such as oxygen. This can be accomplished by placement of an appropriate oxygen absorber within the vessel.

[0036] All of these improvements to the multifunctional vessel assist in the preservation and maintenance of the products present in the vessel or room.

[0037] It will be apparent from the forgoing that while particular forms of the invention have been illustrated various modifications can be made without departing from the scope of the invention. Accordingly, the invention is not intended to be limited by the specification of the application.

1. A multifunctional vessel useful for holding products, such as pharmaceuticals or nutraceuticals or for use in a residential or commercial room, comprising

a vessel for holding said products, and
 a material for controlling the level of moisture within the vessel, placed within the vessel, wherein said material contains a scented material; wherein the moisture control material is saturated with a concentrated solution of the scented material, and wherein the moisture control material desorbs scented material as it absorbs moisture from the environment inside the multifunctional vessel.

2. The multifunctional vessel of claim 1 wherein the moisture control material is placed within a container selected from the group consisting of a canister, a sachet and a packet, preferably a canister with openings therein or containing a permeable membrane.

3. The multifunctional vessel of claim 1 wherein the moisture control material is selected from the group consisting of bentonite clay, silica gel, montmorillonite clay, molecular sieve, and mixtures thereof, preferably silica gel or bentonite clay.

4. The multifunctional vessel of claim 1 wherein the level of saturation with moisture of the moisture control material when placed within the multifunctional vessel is less than 5%, preferably less than 1%.

5. The multifunctional vessel of claim 1 wherein the level of moisture within the vessel prior to introduction of the moisture control material is less than 40% relative humidity, preferably less than 20% relative humidity.

6. (canceled)

7. The multifunctional vessel of claim 1 wherein the scented material comprises an oil or water soluble scented substance.

8. The multifunctional vessel of claim 1 wherein the concentration of scented material within the moisture control material is up to 40% by weight of the weight of the moisture control material prior to addition of the scented material.

9. (canceled)

10. The multifunctional vessel of claim 1 further comprising an oxygen absorber.

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