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(54) **PACKAGING TRAY FORMED FROM ABSORBENT MATERIAL**

VERPACKUNGSSCHALE AUS SAUGFÄHIGEM MATERIAL

BARQUETTE D'EMBALLAGE FORMEE DE MATERIAU ABSORBANT

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## Description

**[0001]** This invention relates to a container for use in the storage and/or display of products, such as fresh meat and other types of fresh food product, and is related especially, but not exclusively, to a container which is tray-shaped or dish-shaped and which may be made of a plastics material.

**[0002]** There is a wide range of existing tray-shaped containers for the storage and display at point-of-sale for, say, fresh meat. In the simplest form, these are made of a single layer of a solid or cellular plastics material

**[0003]** During storage of fresh meat and other food products, fluids may exude from the foodstuff and seep in to the internal wall of the container causing undesirable discoloration thereof. In these circumstances, some form of absorbent material may be located upon the inner surface of the base of the container to absorb such fluid and to prevent the seepage of the exuded fluid on to the remainder of the container wall structure.

**[0004]** There have been a number of developments and improvements to separate the absorbent material from the food product being packaged. The absorbent material may be sandwiched between a perforated film or sheet and the base of the container or, in another example, the tray is made of a cellular structure which is capable of absorbing fluid if the surface is perforated. The disadvantages of these developments is that the fluid may seep through the absorbent material or through the cellular foam structure and exude from the open rim or flange of the container.

**[0005]** Also, some fresh food products, particularly fresh meat products, are stored and displayed at point-of-sale in containers of the type in question with a prescribed atmosphere of gas, such as oxygen and carbon dioxide, depending on established practice in modified atmosphere packaging of fresh food products, in which case, the container has to have its normally open top closed and sealed to the rim of the container by means of, for example, a transparent barrier film.

**[0006]** Containers for this use are made from plastics materials which have at least one layer which is an impermeable fluid barrier. This is normally on the inner surface of the container. It is obvious that if this surface is perforated in order to allow juices or liquids, which exude from the packaged foodstuff, to be absorbed on an absorbent material or cellular structure within the base or wall of the container, then the modified gas atmosphere can escape from the container by the same route.

**[0007]** DE 197 25 949 A discloses a tray or dish-shaped container comprising, like many containers of this particular type, a porous wall structure having on its inner and outer surfaces respective impermeable, fluid barrier film layers and being defined by a base-wall, a continuous side-wall upstanding therefrom and a peripheral rim extending outwardly of the side wall. US 3834606 also discloses such a tray which, however, has a portion of the wall structure defining an interior space therein, which space is sealed from the remainder of the wall structure in a fluid tight manner between the inner and outer fluid barrier film layers across the thickness of the wall structure and is at least partially filled by a material from which the wall structure is made. Such a fluid tight seal is provided in only the side wall of the wall structure to enhance the manufacture of the tray. The container according to the present invention is characterized in that the space which is sealed from the remainder of the wall structure, is in the base wall of the container's wall structure, whereby, in use of the container, any fluid absorbed into the space is retained therein and prevented from migrating into the remainder of the interior thickness of the wall structure.

**[0008]** By "porous wall structure" is meant, throughout this specification, a wall structure through whose thickness a fluid, namely a gas or liquid, is capable of migrating or otherwise flowing; for example, a wall structure of cellular material of open cell structure.

**[0009]** The outer surface of the wall structure is preferably provided with an impermeable fluid barrier film layer.

**[0010]** Preferably, the defined space is sealed from the remainder of the container wall structure by conventional techniques or, for example, by ultrasonic welding, to provide, for example, a continuous space-defining seal between the inner and outer surfaces of the wall structure across the thickness thereof.

**[0011]** The space may be completely filled by the material from which the container wall structure is made by, say thermoforming; for example, a cellular material, such as expanded polystyrene, of open cell structure which can preferably absorb a fluid. If, say, the inner surface of the wall structure is provided with an impermeable, fluid barrier film layer, then that layer, in the region of the space, may be perforated to permit fluid in the container to seep or otherwise pass into the space where it can be absorbed by the material of the wall structure or other absorbent material located in the space.

**[0012]** In this manner, any fluid such as blood or other fluid exuding from, say, a fresh meat product which is stored and displayed within the container and which migrates into the space defined within the wall structure, is prevented from migrating or otherwise passing further into the thickness of the remainder of the container wall structure.

**[0013]** Similarly, any gas(es), provided as prescribed atmosphere within the container and retained therein by an impervious, gas barrier film as a closure for the container, which migrates into the space defined within the container wall structure, usually via perforations in an impermeable, gas barrier sheet layer on the inner surface of the wall structure, is prevented from migrating further through and along the thickness of the wall structure and escaping from the container via the exposed open edge of the wall structure at the rim or peripheral flange of the container.

**[0014]** Additionally, the container may be provided with a peripheral rim or flange attached to the upper edge of the side wall.

**[0015]** The gas barrier film seal may be effected along the peripheral rim or flange of the container.

**[0016]** An embodiment of container in accordance with the invention will now be described by way of example and with reference to the accompanying drawings in which:

Figure 1 is a bottom plan view of the embodiment of container; and

Figure 2 is a section along the line II-II in Figure 1.

**[0017]** Referring to Figures 1 and 2 of the drawings, a rectangular, tray-shaped container thermoformed from open cell expanded polystyrene sheet, as indicated generally at 1, has a porous wall structure comprising a base wall 12, a continuous, tapered side wall 13 upstanding therefrom and an outwardly extending peripheral rim 14. The inner and outer surfaces of the wall structure have thereon respective impermeable, fluid barrier film layers 15 and 18.

**[0018]** The inner layer 15 on the base wall 12 of the container 1 is perforated, in a regular array of perforations, as shown at 16, to allow any excess blood and/or other fluids exuding from a fresh meat product placed on the base wall 12 of the container 1, to pass into the thickness of the base wall 12 for absorption therein.

**[0019]** At least the major portion of the base wall 12 of the container 1 is sealed, in a fluid type manner at 17, from the remainder of the wall structure of the container 1 to define a space 100 sealed from the remainder of the wall structure. In this manner, any liquid such as blood and/or any other exuded fluids, absorbed in that sealed space 100 of the base wall 12, is unable to migrate into the thickness of the remainder of the wall structure of the container 1, thereby preventing, or at least substantially reducing, any undesirable discoloration of the remainder of the wall structure and eliminating any seepage of the liquid from the open flange or rim 14 of the container 1.

**[0020]** As seen in Figure 1, the seal 17 is continuous and generally rectangular in plan, following the profile of the rectangular base wall 12, of the container 1. That seal 17, which is effectively represented by the bringing together, in a fluid-type manner, of the outer surface and inner surface of the base wall 12, such being formed by conventional thermoforming techniques.

**[0021]** If needs be, the container 1 may be closed, with the associated fresh meat product (not shown) contained therein, by means of a transparent, impervious, fluid barrier film 19 sealed to the rim or peripheral flange 14 of the container 1.

**[0022]** Thus, any modified atmosphere of, say, oxygen and carbon dioxide gases, within the sealed container 1, is retained therein, as any of the gas(es) is prevented from migrating into and through the thickness of the remainder of the wall structure and escaping from the exposed free edge of the peripheral flange or rim 14.

**[0023]** In use of the container 1, any blood or other fluids exuding from a fresh meat product placed upon the inner surface layer 15 of the base wall 12 of the container 1 will be absorbed into the space 100 defined within the thickness of the base wall 12 but filled with absorbent material from which the container has been thermoformed, is unable to seep into the remainder of the wall structure, due to the continuous seal 17, as discussed above. Thus, undesirable discoloration of the remainder of the wall structure and loss of any modifying gas(es) are eliminated or substantially reduced.

**[0024]** It is noted that the barrier film discussed above comprises a laminate of, for example, five layers of which preferably one constitutes a gas barrier layer, comprising, for example, copolymers of ethylene and vinyl alcohol (EVOH), the other layers being adhesives or stabilizing layers. The barrier film layers are applied to the body of open-cell expanded polystyrene in a manner well established in the art.

**[0025]** Thus, it can be seen that the embodiment of the invention provides a container which includes a space which is at least partially defined by its wall structure in the base wall thereof and which is sealed, in a fluid-tight manner from the remainder of its wall structure, to prevent any fluid from spreading therefrom to or into the remainder of the container wall structure or, from or out of the container, as the case may be. Further, any gas migration along the thickness of the wall structure, or from the container, is at least partially reduced and, in certain circumstances, eliminated.

**[0026]** It is to be appreciated that, although the embodiment of container described above is generally tray-shaped, the invention can embody any other shape of container having a porous wall structure.

## Claims

1. A container (1) comprising a porous wall structure having on its inner and outer surfaces respective impermeable, fluid barrier film layers (15, 18) and being defined by a base wall (12), a continuous side-wall (13) upstanding therefrom and a peripheral rim (14) extending outwardly of the side-wall (13), a portion of the wall structure defining an interior space (100) therein, which space (100) is sealed (17) from the remainder of the wall structure in a fluid tight manner between the inner and outer fluid barrier film layers (15, 18) across the thickness of the wall structure and is at least partially filled by a material from which the wall structure is made, **characterized in that** the space (100) is in the base wall (12) of the wall structure, whereby, in use of the container (1), any fluid absorbed into the space (100) in the base wall (12) is retained therein and

prevented from migrating into the remainder of the interior thickness of the wall structure.

2. A container (1) according to claim 1, wherein the material from which the container wall structure is made is a cellular material, preferably of open cell structure.

3. A container (1) according to claim 1 or 2, wherein the inner fluid barrier film layer (15) at least in the region of the space (100), is perforated.

4. A container (1) according to claim 1, 2 or 3, wherein the material is an absorbent material.

5. A container (1) according to any preceding claim, which is closed from the atmosphere by an impervious gas barrier film (19) sealed to the peripheral rim (14) of the wall structure.

6. A container (1) according to any preceding claim wherein the space (100) is completely filled by the material from which the wall structure is made.

**Patentansprüche**

1. Behälter (1), welcher eine poröse Wandanordnung aufweist, welche auf ihren inneren und äußeren Oberflächen jeweils undurchlässige, fluidsperrende dünne Schichten (15, 18) aufweist, und welche definiert wird durch eine Basiswand (12), eine von dieser aufragenden durchgehenden Seitenwand (13) und einen sich von der Seitenwand (13) nach außen erstreckenden Umfangsrand (14), wobei ein Teil der Wandanordnung einen inneren Raum (100) in dieser definiert, welcher Raum (100) von dem Rest der Wandanordnung in fluiddichter Art zwischen den inneren und äußeren fluidsperrenden dünnen Schichten (15, 18) über die Dicke der Wandanordnung abgedichtet (17) und zumindest teilweise mit einem Material gefüllt ist, aus dem die Wandanordnung hergestellt ist,
**dadurch gekennzeichnet, dass**
der Raum (100) sich in der Basiswand (12) der Wandanordnung befindet, wobei bei einer Benutzung des Behälters (1) Fluid, welches in den Raum (100) in der Basiswand (12) aufgenommen wird, in diesem festgehalten und an einer Wanderung in den Rest der inneren Dicke der Wandanordnung gehindert wird.

2. Behälter (1) nach Anspruch 1, wobei das Material, aus dem die Behälter-Wandanordnung hergestellt ist, ein Material mit Zellstruktur, bevorzugt ein Material mit offener Zellstruktur, ist.

3. Behälter (1) nach Anspruch 1 oder 2, wobei die innere fluidsperrende dünne Schicht (15) zumindest im Bereich des Raumes (100) perforiert ist.

4. Behälter (1) nach Anspruch 1, 2 oder 3, wobei das Material ein absorbierendes Material ist.

5. Behälter (1) nach einem der vorhergehenden Ansprüche, welcher gegen die Atmosphäre durch eine undurchlässige, gasdichte dünne Schicht (19) abgeschlossen ist, welche dünne Schicht (19) mit dem Umfangsrand (14) der Wandanordnung versiegelt ist.

6. Behälter (1) nach einem der vorhergehenden Ansprüche, wobei der Raum (100) vollständig mit dem Material gefüllt ist, aus dem die Wandanordnung hergestellt ist.

**Revendications**

1. Conteneur (1) comprenant une structure de paroi poreuse ayant, sur ses surfaces interne et externe, des couches respectives (15, 18) de film barrière aux fluides, imperméables, et étant définie par une paroi de base (12), une paroi latérale continue (13), dressée à partir de celle-ci, et un rebord périphérique (14) s'étendant vers l'extérieur de la paroi latérale (13), une partie de la structure de paroi définissant un espace intérieur (100) dans celle-ci, lequel espace (100) est fermé hermétiquement (17) vis-à-vis du reste de la structure de paroi d'une manière étanche aux fluides entre les couches de film barrière aux fluides, interne et externe (15, 18) à travers l'épaisseur de la structure de paroi et est au moins partiellement rempli par une matière à partir de laquelle la structure de paroi est faite, **caractérisé par le fait que** l'espace (100) se situe dans la paroi de base (12) de la structure de paroi, ce par quoi, lors de l'utilisation du conteneur (1), tout fluide absorbé dans l'espace (100) dans la paroi de base (12) est retenu dans celui-ci et empêché de migrer dans le reste de l'épaisseur intérieure de la structure de paroi.

2. Conteneur (1) selon la revendication 1, dans lequel la matière à partir de laquelle la structure de paroi de conteneur est faite est une matière cellulaire, de préférence d'une structure à cellules ouvertes.

3. Conteneur (1) selon l'une des revendications 1 ou 2, dans lequel la couche interne (15) de film barrière aux fluides, au moins dans la région de l'espace (100), est perforée.

4. Conteneur (1) selon l'une des revendications 1, 2 ou 3, dans lequel la matière est une matière absorbante.

**5.** Conteneur (1) selon l'une quelconque des revendications précédentes, qui est fermé vis-à-vis de l'atmosphère par un film barrière aux gaz imperméable (19), scellé sur le rebord périphérique (14) de la structure de paroi.

**6.** Conteneur (1) selon l'une quelconque des revendications précédentes, dans lequel l'espace (100) est complètement rempli par la matière à partir de laquelle la structure de paroi est faite.

Figure 1

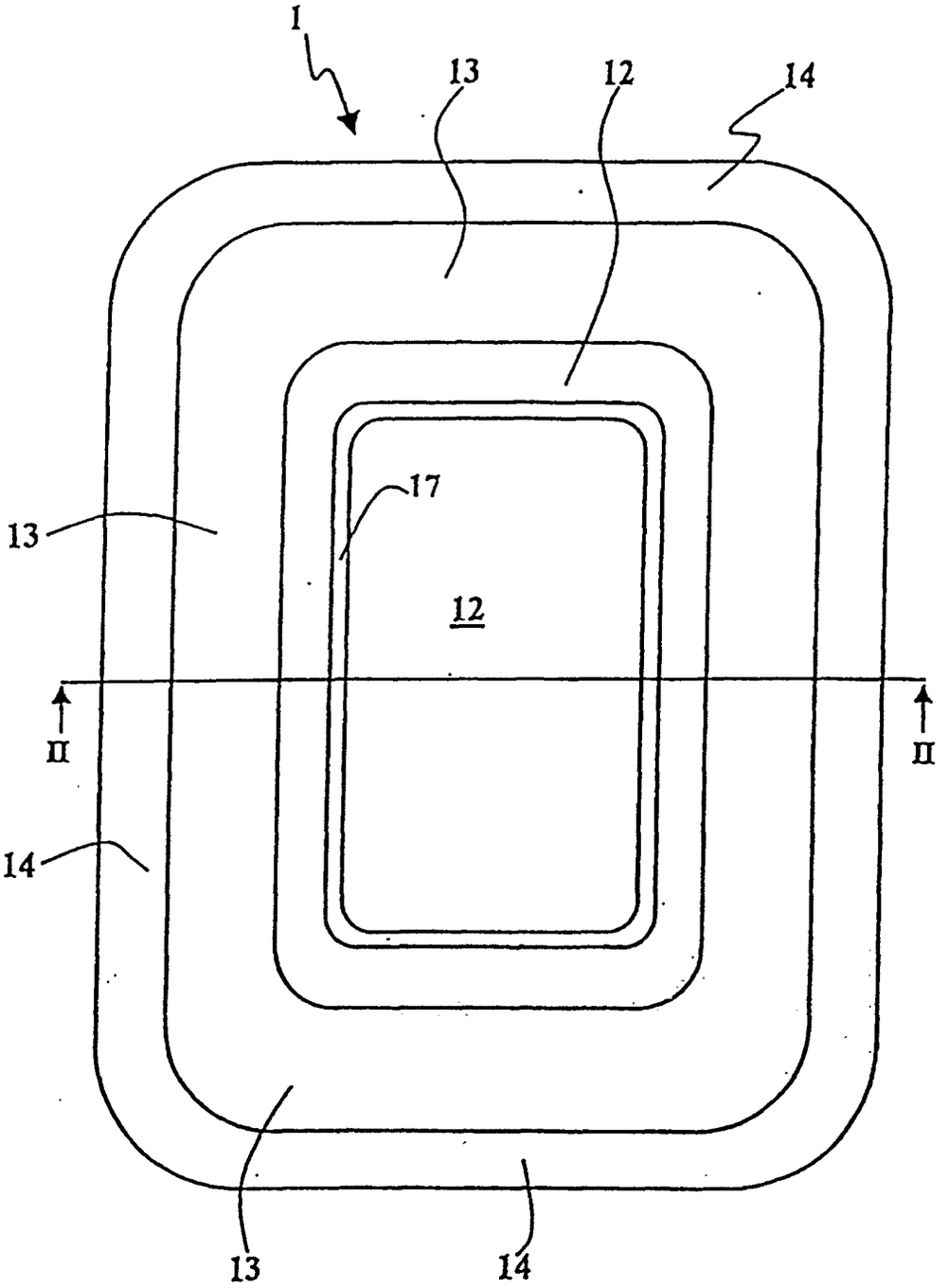

Figure 2