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Cellulose container with inner-mold label

Abstract

A container or lid may have a body of molded cellulose, the body of molded cellulose defining one or more walls. The wall has an outer surface and an inner surface. A depression is in the outer surface of the wall or walls. One or more labels, is or are embedded in the depression in the outer surface of the wall. A method for labelling a container or lid having a cellulose body may also be provided.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION (1) The application relates claims the priority of U.S. Patent Application Ser. No. 63/245,979, filed on Sep. 20, 2021 and incorporated herein by reference.

TECHNICAL FIELD

(1) The application relates to cellulose containers used in the packaging industry for products such as foodstuff, cosmetics, or objects or materials of various types. The cellulose may also be referred to as moulded (molded) pulp, fiber (fibre), thermoformed fiber (fibre).

BACKGROUND

(2) Containers are traditionally used when packaging foodstuff in liquid or loose form, or for other objects, or materials. While plastics have been commonly used due to their properties, there

remains a demand for the use of molded cellulose for containers. There are various reasons for the popularity of cellulose for containers, notably the use of natural fibers for such containers, the compostable nature of some of these cellulose containers, the possibility of using recycled fibers, the cost-effectiveness, and the sustainability, to name a few advantages. However, such containers may not have the esthetic features of plastics and may therefore may be disadvantaged as product sellers may tend to favor plastics over cellulose containers, notably from a marketing perspective. (3) It would therefore be desirable to improve manufacturing techniques so as to enhance the esthetic features of cellulose containers.

SUMMARY

(4) In one aspect, there is provided a container or lid comprising: a body of molded cellulose, the body of molded cellulose defining at least one wall, the wall having an outer surface and an inner surface a depression in the outer surface of the at least one wall; and at least one label, the at least one label being embedded in the depression in the outer surface of the at least one wall.

(5) Further in accordance with the aspect, for example, a continuous edgeless surface is formed at a junction between the at least one label and the outer surface.

(6) Still further in accordance with the aspect, for example, a surface portion of the container or lid is seamless at the junction between the at least one label and the outer surface.

(7) Still further in accordance with the aspect, for example, a volumetric geometry of the depression corresponds substantially to that of the at least one label.

(8) Still further in accordance with the aspect, for example, any portion of a peripheral edge of the at least one label projects out of the depression by a distance that is less than a thickness of the label.

(9) Still further in accordance with the aspect, for example, the body of molded cellulose is a monoblock body of cellulose.

(10) Still further in accordance with the aspect, for example, the at least one label has a paper substrate.

(11) Still further in accordance with the aspect, for example, the at least one label has a dry liquid-activated adhesive on a face thereof applied against the body of molded cellulose.

(12) Still further in accordance with the aspect, for example, the dry liquid-activated adhesive is dextrin.

(13) Still further in accordance with the aspect, for example, the at least one label is adhesive-less on a face thereof applied against the body of molded cellulose.

(14) Still further in accordance with the aspect, for example, a starch content of the molded cellulose secures the at least one label to the body.

(15) Still further in accordance with the aspect, for example, the at least one wall has a thickness of 0.5 mm to 0.9 mm inclusively.

(16) Still further in accordance with the aspect, for example, the body defines an inner cavity.

(17) Still further in accordance with the aspect, for example, a surface of the inner cavity has a coating thereon.

(18) Still further in accordance with the aspect, for example, the coating is a waterproofing coating.

(19) In accordance with another aspect of the present disclosure, there is provided a method for labelling a container or lid having a cellulose body comprising: positioning at least one label against a surface of a mold; inserting cellulose into the mold such that the at least one label is sandwiched between the cellulose and the surface of the mold; pressuring, heating and extracting water from the cellulose in the mold, whereby the cellulose is thermoformed with the at least one label embedded on a surface of the thermoformed cellulose; and removing the thermoformed cellulose from the mold, the thermoformed cellulose being a container or a lid.

(20) Further in accordance with the other aspect, for example, inserting cellulose into the mold includes inserting a mat of cellulose.

(21) Still further in accordance with the other aspect, for example, pressuring, heating and

extracting water from the cellulose in the mold causes a wall thickness reduction between 3 to 4 times from the mat of cellulose to the thermoformed cellulose, for at least one wall thereof.

(22) Still further in accordance with the other aspect, for example, positioning at least one label against a surface of a mold includes positioning the at least one label such that a surface of the at least one label having a dry liquid-activated adhesive faces the cellulose.

(23) Still further in accordance with the other aspect, for example, another step may include adding a coating to at least one surface of the thermoformed cellulose after removal from the mold.

Description

DESCRIPTION OF THE DRAWINGS

- (1) Reference is now made to the accompanying figures in which:
- (2) FIG. 1 is a perspective view of a cellulose container and lid with inner-mold label in accordance with the present disclosure;
- (3) FIG. 2 is a cross-sectional schematic view of a wall of the cellulose container and lid of FIG. 1, in accordance with a variant of the present disclosure; and
- (4) FIGS. 3A to 3C show a sequence of molding the cellulose container or lid with inner-mold label of FIG. 1.

DETAILED DESCRIPTION

(5) Referring to the drawings and more particularly to FIG. 1, a cellulose container in accordance with the present disclosure is generally shown at **10**. The container **10** may be referred to as a receptacle, a cup, a pot, a package, among other possible names. Moreover, while a container is shown, other objects may be made of labelled cellulose in accordance with the present disclosure, such as cups, trays, bowls, among examples. As shown in FIG. 1, the container **10** may be used with a lid **20** that may be releasably secured to a top of the container **10** to close a top opened end of the container **10**. The lid **20** may or may not be made of cellulose, but in the illustrated embodiment, it is. Likewise, the container **10** may not be made of cellulose, while the lid **20** is. Stated differently, the present disclosure pertains to a container **10** made of cellulose, and/or a lid **20** made of cellulose. The container **10** may be used for packaging various items, whether in liquid, solid, gel, viscous forms, or as loose material or matter, granules, etc. The lid **20** may be used to close the open top of a container, such as the container **10**.

(6) The container **10** has cellulose as a main material. The cellulose is said to be the main material in that it makes up the greatest proportion by weight and/or by volume of the empty container **10**. The cellulose may also be said to form the structure of the container **10**, in that the shape of the container **10** is provided and maintained by the cellulose. Cellulose may also be known as moulded (molded) pulp, fiber (fibre), thermoformed fiber (fibre). These expressions may be used interchangeably herein. The cellulose may have any appropriate natural fibers (biomass) such as wood fibers, plant fibers, straw, cereals, annual plants, etc. The moulded cellulose may be made from recycled paper and water, cardboard, virgin cellulose. Additives can be added to the pulp to give desired characteristics to the cellulose. The given characteristics may include colour, moisture resistance, and/or enhanced shock resistance.

(7) The container **10** shown in FIG. 1 has a generally rectangular prism shape with top opened end (e.g., slight upward flaring for mold ejection), when seen from a top view, but any other appropriate shape may be used with other possible geometries. The shapes may include oblong (as shown), rectangular, square, polygonal, oval, circular, among possible peripheral shapes, with the possibility of shape transitions (e.g., from a rectangular base to an oval rim). Geometries may include prisms, cylinders, hemispheres, truncated hemispheres, boxes, combinations thereof, among possible geometries. The container **10** may not be limited to any particular shape.

(8) Reference will now be made to the container **10** when laid on a horizontal surface and thus with

its open top end. In such an orientation, the container **10** may be said to have a bottom wall **11** with side walls **12** projecting generally upwardly (e.g., perpendicular to the bottom wall **11**, or at other angles relative to the bottom wall **11**). There are four different side walls **12** shown based on the exemplary geometry, namely side walls **12A**, **12B**, **12C** and **12D**. The side walls are referred to concurrently as **12** in the description but are shown as **12A-12D** in the figures. Although sharp edges are shown between the bottom wall **11** and the side walls **12**, a continuous geometry may be used to avoid the presence of sharp edges. For example, a bowl-shaped hemisphere may not have such sharp edges. Likewise, the side walls **12A** to **12D** may be said to be distinct from one another as each forms a side of the container **10**, but the container **10** may be construed as having a single side wall **12** forming a closed figure with itself, for instance when the container **10** has a cylindrical shape, or corner regions may be arcuate so as to optionally have an inner surface and/or an outer surface without apparent edges. For simplicity, reference is made to the container **10** as having side walls **12**, but the present disclosure also covers a single side wall **12** as described above.

(9) The bottom wall **11** and the side walls **12** are part of a body of molded cellulose. The body may be said to be monoblock in that the bottom wall **11** and the side walls **12** are integrally molded together as one piece (though the walls **11** may have labels as described herein). The bottom wall **11** and side walls **12** concurrently define an outer exposed surface **13** of the container **10**. More specifically, when the container **10** has the lid **20** thereon, the part of the container **10** that is seen is the outer exposed surface **13**. The bottom wall **11** and side walls **12** also concurrently define an inner surface **14** that may also be referred to as inner surfaces **14**. As detailed below, the inner surface **14** may not necessarily be of cellulose as it is contemplated to provide some surface coatings to provide given characteristics to the container **10**, such as waterproofness or airtightness. The surface coatings may be added after molding, for example.

(10) The combination of the bottom wall **11** and the side walls **12** define a concavity **15**. The concavity **15** may be referred to as the inner cavity **15** of the container **10**. It is the inner cavity **15** that acts as a receptacle for receiving material in the container **10**. The volume of the inner cavity **14** may depend on the contemplated use. While the inner cavity **15** is shown as defined by the continuous, smooth surfaces of the bottom wall **11** and side walls **12**, it is considered to provide the container **10** with various surface features, to define compartments, supports. For example, if the container **10** is used as an egg box, there may be a half dozen or a dozen interior support features to hold up the eggs separately.

(11) A rim **16** defines the top open end of the container **10** and is at a junction between the outer exposed surface **13** and the inner surface **14**. The rim **16** is shown as being a single continuous linear edge that may lie in a flat plane. However, it is considered to have features such as flanges, catches, ledges, wedges, holes, bosses, channels, to form part of connection features to releasably secure the lid **20** to the container **10**, for instance by complementary connection features on the lid **20**. In a variant, the rim **16** may define a flange or like surface for a sealing operculum (e.g., plastic film) to be sealingly secured to the container **10**.

(12) One or more inner-mold labels **17** is provided on the outer exposed surface **13**. The inner-mold label(s) **17** is provided to identify the product in the container **10**, for example, and may have information such as a brand, drawings, logos, pictures, names, volume data, nutritional data, service information, barcode, QR code, to name but a few of the types of data that may be on the label(s) **17**. The label(s) **17** may have a paper substrate or facestock, upon which data is printed, drawn, etc. Additional layers may be provided on the label(s) **17**, though the surface of the label(s) **17** interfaced to the cellulose of the container **10** is fiber-based, such as paper. The label **17** may also be made of a polymer substrate. However, the use of a fiber-based material for the label **17** may facilitate disposal of the container **10** with label **17**, such as through composting or recycling.

(13) As shown in FIG. 1, a single inner-mold label **17** covers side walls **12A** and **12B**. It is also considered to have that single inner-mold label **17** cover the side walls **12C** and **12D** and/or the bottom wall **11** as well, with the single inner-mold label **17** folded at the intersection between walls

11 and **12**, if necessary. Moreover, the inner-mold label **17**, as a single sheet of paper, may be die cut into a given shape, to be folded and/or formed to the shape of the container **10**. As a result, a seam **18** may be present in the inner-mold label **17**. Other inner-mold label configurations are considered, such as having discrete labels **17** on separate faces of the container **10**. The label(s) **17** is said to be an inner-mold label as it is in the mold during the molding process by which the container **10** is formed, so as to be integrally part of the container **10**. Other expressions may be used to describe the inner-mold label **10** as in-mold label, integrated label, mono-block labelling, IML. The inner-mold label molding process will be described hereinafter with reference to FIGS. **3A** to **3C**.

(14) Still referring to FIG. **1**, the lid **20** is shown as being generally flat. The lid **20** may have a cover wall **21** that is shaped to be laid onto the container **10** so as to close the open top end of the container **10**. Consequently, the cover wall **21** may be said to be planar or flat, but may have other geometries as well (e.g., three dimensional shapes, such as a dome, as alternatives to the being flat. Likewise, the contour of the cover wall **21** generally matches the shape of the open top end of the container **10**, but may have other shapes based on the shape of the container **10**.

(15) According to an embodiment, the lid **20** has a skirt **22** by which it attaches to the rim **16** of the container **10**. The skirt **22** may also be referred to as a peripheral wall, as a catch, as a ledge, and may use any appropriate connection technology for the releasable complementary connection to the container **10**. The lid **20** has an outer exposed surface **23** that may also be referred to as a main surface of the lid **20** and that is seen when the container **10** is closed with the lid **20**. The outer exposed surface **23** is generally flat but may have surface features, for instance to enable the stacking of filled containers with lids **20** thereon, such as ribs, shoulders, etc. The inner surface **24** is on an opposite surface of the outer exposed surface **23**. The inner surface **24** typically faces the inner cavity **15**. The inner surface **24** may have a surface coating that may be equivalent to the surface coating that is on the inner surface **14** of the container **10**. In similar fashion to the container **10**, an inner-mold label **27** may be provided on the outer exposed surface **23** of the lid **20**, though optionally. The expression “inner-mold” is used for label **27** for the same reason as the inner-mold label **17** of the container **10**. However, in an embodiment, it is considered to have inner-mold technology for either the container **10** or the lid **20**, i.e., not both. The lid **20** may also be made of a material other than molded cellulose.

(16) Referring now to FIG. **2**, a schematic cross-section of a wall **11**, **12**, and/or **21** of the container **10** and/or lid **20** is shown to exhibit the configuration of the inner-mold label **17/27** relative to the cellulose material of the walls **11**, **12** and/or **21**. Stated differently, the configuration shown in FIG. **2**, may be for any one or more of the wall **11**, **12**, and/or **21**. FIG. **2** is schematic, to illustrate a depression in the cellulose material in which the label **17/27** is received, in spite of the fact that the label **17/27** is paper-thin (though not necessarily in paper), whereby magnifying optical devices may be required to observe such penetration in the depression. On the contrary, the thickness of the wall **11**, **12** and/or **21** may be proportionally shown as thinner than it actually is relative to the label **17/27**.

(17) The walls **11**, **12** and/or **21** are illustrated as being made of a single layer of cellulosic material, but more than one layer may be present. For example, an outer layer and/or a central layer, defining the outer exposed surface **13/23**, may be made of recycled fibers, while an inner layer, i.e., that may be in touch with foodstuff depending on use, may be made of virgin fibers. As another example, an outer layer may include a first color and the inner layer may include a second color. As yet another example, the layers may have different fiber orientations, to strengthen the end container.

(18) The outer exposed surface **13/23** is shown and it is observed that the inner-mold label **17/27** form an edgeless continuous surface with the outer exposed surface **13/23**. The expression edgeless may be defined as meaning that there is no substantially projecting portion of label or cellulose at the junction between surface **13/23** and label **17/27**—edges may be present where the labels **17/27** are folded on themselves, such as at seam **18**. Stated differently, the junction between the cellulose

matter of the surfaces **13/23** is seamless with the upper surface of the material of the labels **17/27**. In a variant, the surface coefficient of friction may vary between the outer exposed surface **13/23** with molded cellulose and the surface **17/27**, in spite of the seamless junction. The labels **17/27** are lodged or embedded in a depression formed into the cellulose material of the walls **11/12/21**, by the equivalent of a thickness T of the labels **17/27**. For example, the labels **17/27** have a thickness between 0.05 mm and 0.15 mm. The depression has a depth D that may be equal to the thickness T. The depression may be said to have a volumetric shape corresponding to that of the label **17/27**. A peripheral edge of the labels, shown as **17A/27A**, is therefore in face-to-face contact with the cellulose material of the walls **11/12/21**. In an embodiment, the peripheral edge **17A/27A** of the label **17/27** may not be fully surrounded by the cellulose material, but any portion of the peripheral edge **17A/27A** not fully in the depression is out by a distance that is less than thickness T. Hence, seamless may be said to define the absence of a step between the label **17/27** and the cellulose matter of the surfaces **13/23** surrounding immediately the label **17/27**. It may be said that any step, if present, may have a value that is less than the thickness T, as some form of embedding of the label **17/27** into the surface **13/23** may always be present. Stated differently, there is always some penetration of the label **17/27** into the surface **13/23**, such that the surface **13/23** as in inward step at a location of junction with a periphery of the label **17/27**. The penetration may be all around the periphery of the label **17/27**. It may be said that a wall of the depression is face to face with an edge surface of the periphery of the label **10**.

(19) In an embodiment, no added adhesive is between the labels **17/27** (e.g., they are adhesive-less) and the cellulose of the walls **11, 12, 21**, but starch that is an integral part of the pulp in the molding process may contribute to the adhesion of the paper substrate of the label **17/27** to the cellulose of the walls **11/12/21**. In another embodiment, a thin layer or spots of a dry liquid-activated adhesive (moistenable adhesive) is provided on the surface of the label **17/27** that adheres to the walls **11/12/21**. A dry liquid-activated adhesive may be said to have limited tackiness when dry, but with the tackiness increasing substantially once the adhesive is moistened. The liquid-activated adhesive may for instance be a dextrin (e.g., vegetable starch). In another embodiment, the pulp sludge may incorporate an adhesive additive.

(20) Still referring to FIG. 2, a coating A is shown as covering the inner surface **14/24** of the container **10**/lid **20**. The coating A may be applied after the molding of the container **10** or lid **20**. The coating A may be any appropriate type of coating to provide some characteristics to the container **10** or lid **20**, as described above. For example, the coating A may be a wax, a polymer, a metal (e.g., aluminum foil), and as a result properties such as airtightness, waterproofness, may be given to the container **10**/lid **20**. Additional coating layers may be provided, for instance on top of the coating A, or on the outer exposed surface **13/23**. Likewise, inner-mold labels **17/27** may be on the inner surfaces **14/24**.

(21) While the walls **11, 12** and **21** are shown as being flat in FIG. 2, they may also be curved, such as shown by curve lines C. Stated differently, curve lines C represent a contemplated shape of the wall **11, 12** and/or **21** where the labels **17/27** are embedded. The curvature may be cylindrical, spherical, etc. In spite of the presence of curvature, the labels **17/27** still form a generally edgeless continuous surface with the surrounding exposed surface **13/23**. FIG. 2 may not be to scale. The labels **17/27** and the coating A are shown thicker than they may actually be, for the clarity of the figures.

(22) Referring to FIGS. 3A to 3C, a cellulose molding process is described, by which the container **10** and/or lid **20** may be fabricated with the inner-mold labels **17/27** integrated therewith, in the edgeless continuous surfaces. For simplicity, the mold is shown as having a first mold part **30** and a second mold part **31** concurrently forming a single cavity for molding a single part (herein shown, the lid **20**). Other mold parts (also known as slides) and/or more than one cavity per mold may be provided as well.

(23) The mold shown in FIGS. 3A to 3C is for molding the lid **20** with the inner-mold label **27**.

However, a similar molding approach may be used to fabricate the container **10**. The first mold part **30** has cavity portions **30A** that may essentially be an annular channel to form the skirt **22**. Optionally, one or more injection port(s) **30B** may be present, through which pulp may be injected in the mold cavity. The injection port(s) **30B** may be optional, in that other molding techniques may be used, such as using a cellulose mat **M**, also shown in FIG. **3A**. Other mold components may be present, such as vacuum holes, etc, to drain liquid from the cellulose pulp in the closed mold. It is also considered to provide inflatable bladders to exert a compressive action. For example, the mold parts **30** and **31** exert a pressure when closing, but in a direction of closure. Bladders may be present to exert a pressure in another direction, such as transverse to the mold closing direction. For molding the container **10**, the wall(s) **12** may be oblique relative to the wall **11** for the mold parts **30** and **31** to exert the pressure to the walls **12** when closing in the manner shown in FIGS. **3A** to **3B**.

(24) As shown in FIG. **3A**, the first mold part **30** is separated from the second mold part **31**. The second mold part **31** also has a cavity portion **30B** in which the cover wall **21** is molded. When the first mold part **30** is pressed against the second mold part **31** in the manner shown in FIG. **3B**, there results a cavity that has the geometry of the part to be molded, that is the geometry of the lid **20**.

(25) Prior to the closing of the mold parts **30** and **31** as in FIG. **3B**, the label(s) **27** is inserted in the second mold part **31** (or the mold part **30**) and is applied against a surface of the mold. The insertion may be done manually, by a robot, etc. Humidity on the surface of the mold, vacuum ports and/or mechanical abutments, may ensure that the label **27** remains in a desired position. In an embodiment, cellulose mat **M** is used. The cellulose mat **M** may be a preformed version of the lid **20** (or container **10**), that may generally have the shape of the lid **20** (or container **10**), though thicker. For example, the cellulose mat **M** may be an individual piece manipulated by robot, or may be fed by a roll. The cellulose mat **M** may be damp. As an example, the weight ratio of water to cellulose for the cellulose mat **M** may range from more than 1:1 (i.e., more water than fiber), to 1:2 (double the weight of fiber). Hence, the process of the present disclosure may include a step of molding the mat **M** prior to inserting same in the mold **30** at FIG. **3A**.

(26) Once the label **27** is in the mold, the first mold part **30** may be closed with the second mold part **31** with the label **27** and the cellulose mat **M** (if used) captured in the mold cavity. The label **27** is against the surface of the mold. The closing of the mold causes a compression of the cellulose mat **M** in the mold, such that water may be squeezed out to evacuate through ports in the surface of the mold **M**. The compression may cause a reduction in wall thickness, up to 3 or 4 times, if not more. For example, the walls **11**, **12**, **21** may have a thickness of 0.5 mm to 0.9 mm (inclusively), while the cellulose mat **M** may have had a thickness between 2.0 and 3.0 mm (if not more). There also results an increase in density in the process. Heating also occurs to contribute to the shaping of the fibers and to the evacuation of water from the cellulose and from the mold **30**.

(27) This may be part of a thermoforming process for molded cellulose and/or may be known as a "cure-in-the mold". The thermoforming process/cure-in-the-mold is well suited to use a multi-layer cellulose body, i.e., with the inner-mold label **27**. The pulp may also include starch that contributes to the adhesion of the paper of the inner-mold label **27** to the cellulose. If the label **27** has a dry liquid-activated adhesive, the moisture in the pulp and the pressure in the mold **30** ensure that the label **27** bonds to the cellulose of the wall **21**. As the combination of the inner-mold label **27** and cellulose of the lid **20** are dried, the inner-mold label **27** becomes an integral part of the lid **20**, that defines the depression as a result of the label **27** being in the mold. There results a continuous edgeless surface in the manner shown in FIG. **2**, and/or a connection that has the attributes described above with respect to FIGS. **1** and **2** (depression, seamless, etc). Once the container **10**/lid **20** is ejected from the mold, a surface coating **A** may be applied. For example, a surface coating may be applied to the inner surfaces **14** and/or **24** to provide it(them) with properties, such as water-resistance or waterproofness. This is optional.

(28) In an embodiment without mat, the pulp may be injected into the cavity formed by the first

mold part **30** and the second mold part **31**, such that the pulp fills the cavity, via the injection port(s) **30B**. As the label **27** is against the surface of the mold there is little or no penetration of the cellulose between the mold surface and the exposed surface of the inner-mold label **27**. The pulp surrounds and covers the label **27** when settling. The pulp that is injected has a high water content, but the water is extracted by vacuum/drain holes, by suction, and/or by heating of the mold. Additives may be in the pulp to provide properties to the pulp.

(29) In an embodiment, the process shown in FIGS. **3A** to **3C** for molded pulp uses “cure-in-the-mold” technology, such that the container **10** or lid **20** with labels **17** and/or **27** are well defined, smooth-surfaced molded pulp products. After being formed, the container **10**/lid **20** are captured in the heated mold in which the cellulose with label is pressed and densified. The container **10**/lid **20** with labels **17/27** may therefore be ejected or removed from the mold in a finished state as opposed to being dried in an oven.

(30) The container **10** and or lid **20** may be generally described as having a body of molded cellulose, the body of molded cellulose defining at least one wall, the wall having an outer surface and an inner surface, a depression in the outer surface of the at least one wall; and at least one label, the at least one label being embedded in the depression in the outer surface of the at least one wall.

(31) The container **10** and or lid **20** may optionally be labelled according to a method that may be described as having steps such as positioning at least one label against a surface of a mold; inserting cellulose into the mold such that the at least one label is sandwiched between the cellulose and the surface of the mold; pressuring, heating and extracting water from the cellulose in the mold, whereby the cellulose is thermoformed with the at least one label embedded on a surface of the thermoformed cellulose; and removing the thermoformed cellulose from the mold, the thermoformed cellulose being a container or a lid. Other steps or substeps may include: inserting a mat of cellulose; causing a wall thickness reduction between 3 to 4 times from the mat of cellulose to the thermoformed cellulose, for at least one wall thereof; positioning the at least one label such that a surface of the at least one label having a dry liquid-activated adhesive faces the cellulose; and/or adding a coating to at least one surface of the thermoformed cellulose after removal from the mold.

(32) The above description is meant to be exemplary only, and one skilled in the art will recognize that changes may be made to the embodiments described without departing from the scope of the invention disclosed. Still other modifications which fall within the scope of the present invention will be apparent to those skilled in the art, in light of a review of this disclosure, and such modifications are intended to fall within the appended claims.

Claims

1. A container or lid comprising: a body of molded cellulose, the body of molded cellulose defining at least one wall, the wall having an outer surface and an inner surface, a depression in the outer surface of the at least one wall; and at least one label, the at least one label being embedded in the depression in the outer surface of the at least one wall, a continuous edgeless surface is formed at a junction between the at least one label and the outer surface, the continuous edgeless surface extending to the outer surface surrounding the at least one label, and to the label.
2. The container or lid according to claim 1, wherein a continuous edgeless surface is formed at a junction between the at least one label and the outer surface.
3. The container or lid according to claim 1, wherein a surface portion of the container or lid is seamless at the junction between the at least one label and the outer surface.
4. The container or lid according to claim 1, wherein a volumetric geometry of the depression corresponds substantially to that of the at least one label.
5. The container or lid according to claim 1, wherein any portion of a peripheral edge of the at least one label projects out of the depression by a distance that is less than a thickness of the label.

6. The container or lid according to claim 1, wherein the body of molded cellulose is a monoblock body of cellulose.
 7. The container or lid according to claim 1, wherein the at least one label has a paper substrate.
 8. The container or lid according to claim 1, wherein the at least one label has a dry liquid-activated adhesive on a face thereof applied against the body of molded cellulose.
 9. The container or lid according to claim 8, wherein the dry liquid-activated adhesive is dextrin.
 10. The container or lid according to claim 1, wherein the at least one label is adhesive-less on a face thereof applied against the body of molded cellulose.
 11. The container or lid according to claim 10, wherein a starch content of the molded cellulose secures the at least one label to the body.
 12. The container or lid according to claim 1, wherein the at least one wall has a thickness of 0.5 mm to 0.9 mm inclusively.
 13. The container or lid according to claim 1, wherein the body defines an inner cavity.
 14. The container or lid according to claim 13, wherein a surface of the inner cavity has a coating thereon.
 15. The container or lid according to claim 14, wherein the coating is a waterproofing coating.
 16. The container or lid according to claim 1, wherein the container or lid with the at least one label is a smooth-surface molded pulp product.
 17. The container or lid according to claim 1, wherein the continuous edgeless surface is for an entire periphery of the at least one label.
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