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### CUP AND METHOD OF USE

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#### Abstract

Disclosed is a cup including a base and a sidewall. The sidewall includes an in-use upper sidewall portion that extends to an in-use upper rim of the cup. The sidewall also includes an in-use lower sidewall portion. The upper and lower sidewall portions are separated by an internal rim. The lower sidewall portion defines a lower portion of the cup, and the upper sidewall portion defines an upper portion of the cup. The cup also includes an internal lid for the cup lower portion. The internal lid is arranged in use to locate at the internal rim. The cup further includes an elongated tab which in use extends from the lid and projects beyond so as to enable the tab to hook over the upper rim of the cup.

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## Background/Summary

**CROSS-REFERENCE TO RELATED APPLICATIONS** [0001] This application is a divisional of, and claims the priority benefit of, U.S. patent application Ser. No. 18/012,714, filed Dec. 23, 2022, which claims the priority benefit of PCT Application No. PCT/AU 2021/050677, filed Jun. 25, 2021, which claims the priority benefit of, Australian Application No. 2020902129, filed Jun. 25, 2020, the contents of which are incorporated herein by reference in their entirety.

### TECHNICAL FIELD

[0002] This disclosure relates to a cup. Also disclosed is a method of using the cup. The cup may be used to hold a hot beverage, although it is not limited to such an application. The beverage can be formed from a comestible substance held within the cup (e.g. a dry powder, a liquid concentrate, etc.).

### BACKGROUND

[0003] Insulated cups for holding hot beverages are known. For example, so-called disposable coffee cups can comprise inner and outer walls that enable a user to handle the cup when holding a hot beverage such as coffee, tea, hot chocolate, etc.

[0004] The outer wall of such an insulated cup may comprise a sleeve. Further, the sleeve may be ribbed, whereby the ribs can space a user's finger from the inner wall of the cup (being the wall in contact with the hot beverage). The provision of this sleeve can thus allow a user to handle the cup when it contains a hot (e.g. near-boiling) beverage.

[0005] Multi-piece cups (e.g. formed from waxed paper board) and that comprise two layers for insulation are also known. Further, it is known to supply such cups together with a plastic tub that holds a beverage powder. The plastic tub may be foil-sealed and glued into the paper cup at a base thereof, with the foil seal being removed when using the cup, such as by pouring a hot liquid (e.g. water) into the cup. The hot liquid then mixes with the beverage powder in the plastic tub to form a consumable beverage.

[0006] WO 2013/063226 discloses a container wherein a sidewall of the container is formed to have an upper sidewall and a lower sidewall that are separated but connected by an internal rim. The lower sidewall defines a lower compartment of the container and the upper sidewall defines an upper portion of the container. A lower lid covers the lower compartment, with the lower lid being removed to expose a first beverage ingredient located in the lower compartment. The lower lid also includes a tab that has an extension with an enlarged head at its opposite end, with the head being positioned against an inner wall of the container upper portion. Further, the lower sidewall can be provided with a plurality of radially outwardly extending ribs that are spaced by indentations.

[0007] It is to be understood that, if any prior art is referred to herein, such reference does not constitute an admission that the prior art forms a part of the common general knowledge in the art, in Australia or any other country.

### SUMMARY OF THE INVENTION

[0008] Disclosed herein is a cup comprising a base and a sidewall. The cup can be used to hold a hot beverage, although it is equally suitable to holding a cold beverage or a beverage at room temperature. The cup can also be used to hold non-comestible materials (e.g. powders, solids, and liquids).

[0009] The beverage may be formed from a comestible substance (e.g. powder, solid, liquid) that is held within the cup (e.g. a dry powder, a liquid concentrate, etc.). The beverage can be formed upon the pouring into the cup of a liquid (e.g. pouring in a hot or cold liquid such as water, milk, etc.), with the liquid mixing with the comestible substance.

[0010] The cup as disclosed herein may be formed (e.g. moulded such as by injection moulding) as a one-piece cup that has an integrated compartment (e.g. a chamber) for the comestible substance or non-comestible material. As set forth below, a sleeve (e.g. label) may also be added (e.g. mounted) to the one-piece cup.

[0011] The sidewall of the cup can comprise a plurality of spaced ribs that project outwardly from the sidewall. The ribs can extend for at least a portion of a length of the sidewall (e.g. for a substantial length of the sidewall). An outside profile of the ribs may be constant (e.g. straight). The ribs may be integrally formed (e.g. integrally moulded) with the sidewall of the cup. Further, when the cup is circular in cross-section, the ribs may extend radially out from the cup sidewall (i.e. when the cup is viewed end-on). The ribs can strengthen the cup and, as outlined below, can combine with the sleeve to provide an insulating effect in use.

[0012] As set forth above, the sidewall of the cup can be provided with an externally mounted sleeve. The sleeve can be configured to be located with respect to the ribs such that the sleeve is spaced from the sidewall adjacent to the ribs. The sleeve can extend for at least a portion of the length of the sidewall. Because the ribs can space the sleeve from the sidewall, an in-use insulating effect is provided, including by the associated air gaps (e.g. a user's hand is spaced from the sidewall that is heated or cooled by the beverage, etc. in use).

[0013] For example, the sleeve may extend to the same extent as the ribs (i.e. the sleeve may extend for the length of the ribs). In another example, such as where the ribs only extend for a portion of the sidewall length, the sleeve may extend to an even greater extent than the ribs (i.e. the sleeve may extend for a length of the sidewall beyond the ribs). In each such case, the ribs can be covered (e.g. hidden) by the sleeve. This can give the appearance of an 'un-ribbed' cup but with the performance benefits of a ribbed cup.

[0014] In some embodiments, the sleeve may extend for a full length of the sidewall, from the base to an in-use upper rim of the cup (i.e. whether or not the ribs extend for a full length of the sidewall).

[0015] In such case, the sleeve can give an 'unbroken' appearance to an outside wall of the cup.

[0016] The sleeve may optionally be fastened (e.g. adhered) to the ribs. As above, the sleeve, in conjunction with (i.e. as spaced by) the ribs, may provide an insulating effect in use to allow for user handling of the cup. The sleeve may be configured to also function as a label for the cup. For example, the sleeve may be printed, patterned, etc. on one side thereof (i.e. on its in-use outside face). The sleeve may optionally be textured to improve cup handling and grip. The sleeve may comprise a paper (e.g. waxed paper) or a polymer (e.g. a closed-cell foam polymer, a plastic skin, etc.). Thus, the sleeve can be multi-purpose.

[0017] In some embodiments, the plurality of spaced ribs may extend generally vertically in use of the cup (i.e. when its base is oriented generally horizontally). Vertical ribs can be easier to mould (e.g. by injection moulding of the cup) and can result in the cup being easier to remove from a mould.

[0018] In some embodiments, the sidewall of the cup may comprise an in-use upper sidewall portion and an in-use lower sidewall portion. The upper and lower sidewall portions may be separated by an internal rim.

[0019] Further, the internal rim may connect the upper sidewall portion and the lower sidewall

portion. The lower sidewall portion may define a lower portion of the cup and the upper sidewall portion may define an upper portion of the cup.

[0020] In some embodiments, the lower sidewall portion can define an integrated compartment (or chamber) of the cup, with the internal rim defining a type of internal ledge of the cup. In use, such a compartment may be used to hold comestible substances and non-comestible materials and liquids (i.e. as set forth above). Further, as set forth below, an internal lid (e.g. a foil seal) may be provided for enclosing the cup lower portion (i.e. to enclose the compartment/chamber). The internal lid may be arranged in use to locate at the internal rim. For example, the internal lid may be sealed to the ledge thereof and it may be removable (e.g. able to be peeled off) from the ledge.

[0021] In some embodiments, the lower sidewall portion may be formed to be inset with respect to the upper sidewall portion (i.e. when the cup is viewed front-on). For example, when the cup is circular and is optionally outwardly tapering, the upper sidewall portion may have a greater average diameter than that of the lower sidewall portion. This arrangement can give rise to an inward 'step' of the side wall. The ribs may thus be deepened at the lower sidewall portion to ensure that an outside profile of the ribs remains constant (e.g. straight) for the rib length, and thus remains constant (e.g. straight) for the mounting thereto of the sleeve. This can provide for ease of sleeve attachment, ease of holding and enable clear labelling.

[0022] In some forms, the ribs at the upper sidewall portion may be deeper than the ribs at the lower sidewall portion. This may have the benefit of improving top loading. The depth of the upper ribs can provide greater structural integrity to the upper sidewall portion of the cup such that when a user grips the cup in-use, the sidewalls can support the grip of the user. Furthermore, the increased depth of the ribs with respect to those of the lower sidewall can strengthen the cup at the upper sidewalls such that when loading is applied to the upper rim of the cup, the sidewalls can more effectively resist buckling under the load.

[0023] The ribs may taper outwardly with respect to the base (i.e. when moving from the base to an in-use upper rim of the cup). At least the upper sidewall portion may also taper outwardly with respect to the base. The degree of taper of the ribs and upper sidewall portion may be similar (or it may match). Thus, the upper rim can be located on the upper sidewall portion distal to and radially further from a cup centreline than the internal rim. This outward tapering of the upper sidewall portion can also help facilitate removal of the internal lid from within the cup.

[0024] Conversely, the lower sidewall portion may project generally orthogonally (or may project with a very slight and lesser degree of taper) with respect to the base. This arrangement of the lower sidewall portion can define within the cup a distinct chamber (e.g. a generally cylindrical chamber) for holding therein comestible substances and non-comestible materials and liquids. Such a distinct chamber can have a predetermined volume (e.g. for accurate filling of the substance to be held therein).

[0025] In some embodiments, the plurality of spaced ribs may project outwardly from each of the upper and lower sidewall portions. For example, the ribs may extend for a length (e.g. for a substantial length) of each of the upper and lower sidewall portions (i.e. each rib may extend between and project from the upper and lower sidewall portions).

[0026] In some embodiments, each rib may project outwardly from an outer wall of the lower sidewall, an outer wall of the upper sidewall and an outer portion of the internal rim. This can define a single rib that has an elongate distal (i.e. outer) edge. The elongate distal edge may be formed such that it is generally parallel to at least the upper sidewall portion. As set forth above, the elongate distal edge may be formed to be straight. The sleeve can locate adjacent to (e.g. it can abut) the distal edge of each rib. Optionally, the sleeve may be adhered to the distal edge of at least some of the ribs.

[0027] Also disclosed herein is cup that comprises a base and a sidewall. Such a cup may be configured as set forth above.

[0028] The sidewall can comprise an in-use upper sidewall portion that extends to an in-use upper

rim of the cup. The sidewall can also comprise an in-use lower sidewall portion. The upper and lower sidewall portions can be separated (and e.g. joined) by an internal rim. As above, the lower sidewall portion can define a lower portion of the cup and the upper sidewall portion can define an upper portion of the cup.

[0029] As above, an internal lid can be provided for the cup lower portion. In use, the internal lid can be arranged to locate at (e.g. to be adhered to) the internal rim. As above, the internal lid can be fabricated as a type of foil seal. As above, the internal lid can be removable. The internal lid may also define the lower portion of the cup as a compartment (e.g. as a 'dosing' chamber).

[0030] An elongated tab can also be provided. In use, the tab can extend from the lid and can project beyond, i.e. so as to enable the tab to hook over, the upper rim of the cup. This can locate the tab 'out-of-the-way' in use, such as when pouring a liquid into the cup. The tab may optionally be integrally formed with the lid, or it can be affixedly connected to the lid. In either case, because the tab can hook over the upper rim of the cup, it can also allow for easy removal of the lid, even when a liquid (e.g. hot, near-boiling water) has been poured into the upper portion of the cup such as to fill the cup.

[0031] In some embodiments, the internal rim may be formed to be substantially perpendicular to each of the lower and upper sidewall portions. This can facilitate ease of internal lid positioning (and adherence) thereto. In some embodiments, the internal rim may directly connect the lower and upper sidewall portions to form an internal ledge (i.e. which ledge may support thereat e.g. a foil seal, as set forth above).

[0032] In some embodiments, the internal rim may traverse a perimeter of the cup to thereby define an annular ledge surface. An annulus perimeter of a correspondingly shaped internal lid can then locate at this annular ledge surface.

[0033] As set forth above, in some embodiments, the internal lid may be configured to be releasably bonded around its periphery to define the cup lower portion as a lower, enclosed compartment. For example, the releasable bond may be such as to form a hermetic seal between an underside of the internal lid and an upward surface of the internal rim. This can define a hermetically-sealed chamber that can house e.g. the comestible substance or non-comestible material or liquid therein. A hermetically-sealed chamber can usefully hold e.g. hydroscopic materials therein.

[0034] In some embodiments, the elongate tab may be configured to abut or closely face an inner wall of the upper sidewall portion in use. In this way the tab does not protrude into the volume of the cup upper portion, and so does not interfere with the pouring, etc. of liquid therein.

[0035] In some embodiments, the cup may further comprise an upper lid. The upper lid may be arranged to releasably locate about the upper rim of the cup to define the cup upper portion as an upper (e.g. closeable) compartment. The upper lid may be a releasable press-, push-, etc. fit to the cup upper rim. Thus, the upper lid may be easily removed for liquid pouring therein, and may easily be re-attached thereafter. The upper lid may comprise a spout (e.g. that is integrally formed (e.g. moulded) therein). The spout may be configured to allow a user of the cup to drink therefrom (i.e. without removing the upper lid).

[0036] In some embodiments, a portion of the in-use elongate tab may be secured under the in-use upper lid. In this regard, the tab may be configured and located so as not to interfere with the attachment and removal of the upper lid in use.

[0037] Also disclosed herein is cup that comprises a base and a sidewall. Such a cup may be configured as set forth above.

[0038] The cup sidewall can comprise an in-use upper sidewall portion that extends to an in-use upper rim of the cup. The upper sidewall portion can define an upper portion of the cup. The upper sidewall portion may be configured as set forth above.

[0039] The cup sidewall can comprise an in-use lower sidewall portion. The lower sidewall portion can define a lower portion of the cup. A gain, the lower sidewall portion may be configured as set

forth above.

[0040] The upper and lower sidewall portions can be separated by an internal rim. Once again, the internal rim may be configured as set forth above.

[0041] The cup can also comprise a plurality of spaced ribs that project outwardly from each of the upper and lower sidewall portions. Each rib can extend between the upper and lower sidewall portions. Yet again, each rib may also be configured as set forth above. Further, by extending between the upper and lower sidewall portions, each rib may serve to strengthen the cup sidewall and thus strengthen the cup itself.

[0042] Additionally, and as outlined above, each rib may serve to support and space a sleeve (e.g. a label) from a remainder of the cup sidewall, thereby enabling an insulating effect (such as when the cup is used to hold hot or cold liquids).

[0043] In some embodiments, the internal rim may have a width that is defined by the distance between an inner wall of the lower sidewall portion and an inner wall of the upper sidewall portion.

[0044] In some embodiments, the lower sidewall, the upper sidewall and the internal ledge may have a substantially identical thickness so as to define an outer wall of the lower sidewall, an outer wall of the upper sidewall and an external ledge surface.

[0045] In some embodiments, the upper rim may project outwardly from the upper portion of the cup.

[0046] This can provide a lip at the upper rim (e.g. to increase hoop strength at the upper rim, and to provide a surface to which the upper lid can releasably secure).

[0047] In some embodiments, the cup may be circular in profile.

[0048] In some embodiments, the inner wall of the upper sidewall portion may be provided with a fluid level mark to define an in-use indicator (e.g. to a user, an optical reading device, etc.) of liquid required to fill the volume of the upper portion of the cup.

[0049] Also disclosed herein is a method for preparing a beverage in a cup as set forth above. The method can be used to prepare hot, cold and/or room-temperature beverages. Whilst the method may be manually implemented, the method may also be automated. For example, the method may be implemented by an automatic beverage dispensing machine.

[0050] The method comprises opening the cup at the upper rim thereof. For example, the opening of the cup at the upper rim may involve removing an upper lid from the cup upper rim.

[0051] When, for example, the method is manually implemented, and when the cup is supplied with the upper lid already secured/attached thereto, a user may first remove the upper lid to open the cup at its upper rim.

[0052] Conversely, when, for example, the method is automated (e.g. in a beverage dispensing machine), the cup can be employed in an open format (i.e. the upper lid can be pre-removed therefrom). Incidentally, the 'pre-removed' upper lid may be subsequently attached, either by a suitable mechanism within the beverage dispensing machine, or the upper lid may be supplied to (e.g. by the machine) and then manually attached to the cup by a user.

[0053] The method also comprises pouring a liquid into the open cup (i.e. in through the cup opening at its upper rim). As above, the liquid may be a hot, cold and/or room-temperature liquid, such as water or a water-based liquid. This in-pouring of liquid can enable preparation of a hot, cold and/or room-temperature beverage. The liquid may be poured in manually, or it may be automatically distributed into the cup by e.g. the beverage dispensing machine. This latter step may involve manual intervention by a user, such as by placing the open cup under a distributor (e.g. a spout/outlet) of the machine, which may be manually or automatically activated.

[0054] The method further comprises releasing the elongate tab from its hooked position over the upper rim. This step may occur prior to or after liquid is poured into the open cup. Again, this step may be manually or automatically implemented (e.g. the latter may be performed by a suitable mechanism within the beverage dispensing machine). When manually implemented, the user may bend the tab up into a ready-to-be-grasped position.

[0055] The method additionally comprises pulling the elongate tab to remove the internal lid from the internal rim of the cup to expose a lower portion of the cup to the liquid. A gain, this step may occur prior to or after liquid is poured into the open cup. This step may also expose a comestible substance (e.g. powder, solid, liquid) that is held within the cup lower portion (e.g. a dry powder, a liquid concentrate, etc.).

[0056] For example, when the method is manually implemented, and the user has removed the upper lid to open the cup, the user may release and pull the elongate tab to remove the internal lid before pouring liquid into the cup (e.g. with the liquid then directly contacting and mixing with a comestible substance held within the cup lower portion).

[0057] Alternatively, when the user has removed the upper lid to open the cup, the user may pour the liquid into the cup and, once the cup is suitably filled, the user may then release and pull the elongate tab to remove the internal lid (e.g. with the liquid held in the cup upper portion only then contacting and mixing with the comestible substance held within the cup lower portion).

[0058] Conversely, when the method is automated, and with the cup open at its upper end, a suitable mechanism within the beverage dispensing machine may release and pull the elongate tab to remove the internal lid before the machine distributes liquid into the cup (e.g. with the liquid then directly contacting and mixing with a comestible substance held within the cup lower portion).

[0059] In another variation of the automated method, the machine may distribute liquid into the open cup, ready for the internal lid to be removed. Then, either the suitable mechanism within the machine may release and pull the elongate tab to remove the internal lid, or the liquid filled cup may be presented to a user and the user may then release and pull the elongate tab to remove the internal lid. In either of these cases, the liquid held in the cup upper portion only then contacts and mixes with the comestible substance held within the cup lower portion.

[0060] As set forth above, in some embodiments of the method, a comestible substance (e.g. a beverage ingredient) may be located in the cup lower portion whereby, when the lower portion of the cup is exposed to the liquid, the comestible substance combines (e.g. mixes) with the liquid to form a beverage. As set forth above, the cup may be supplied with the comestible substance already located therewithin (e.g. already hermetically sealed by the internal lid within the cup lower portion).

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## Description

### BRIEF DESCRIPTION OF THE DRAWINGS

[0061] Embodiments will now be described, by way of example only, with reference to the accompanying drawings in which:

[0062] FIGS. 1 to 4 respectively show: a side view; an assembled side view; an in-line exploded view; and a perspective sectional view; of an embodiment of a cup according to the present invention.

[0063] FIGS. 5a, 5b and 5c respectively show: side, perspective; and sectional side views; of another embodiment of a cup according to the present invention.

[0064] FIG. 5d shows a sideview of an embodiment of a cup according to the present invention.

The cup is shown stacked with another cup, wherein a sectioned view of a sleeve is shown fitted in-use on each cup.

[0065] FIG. 5e shows a sectional sideview of the cup shown in FIG. 5d

[0066] FIGS. 6a, 6b and 6c respectively show: side; perspective; and sectional side views; of another embodiment a cup according to the present invention.

### DETAILED DESCRIPTION

[0067] In the following detailed description, reference is made to accompanying drawings which form a part of the detailed description. The illustrative embodiments described in the detailed

description, depicted in the drawings and defined in the claims, are not intended to be limiting. Other embodiments may be utilised and other changes may be made without departing from the spirit or scope of the subject matter presented. It will be readily understood that the aspects of the present disclosure, as generally described herein and illustrated in the drawings can be arranged, substituted, combined, separated and designed in a wide variety of different configurations, all of which are contemplated in this disclosure.

[0068] The cup embodiments as described herein (i.e. cups **2**, **2'**, **2''** shown in FIGS. **1-6**) can be used to hold a hot beverage (e.g. coffee, tea, hot chocolate, etc.). The cup embodiments are equally suitable to holding a cold beverage (e.g. water, soft drinks, juices, flavoured milks, etc.). The cup embodiments are also suitable to holding a beverage at room temperature. Additionally, the cup embodiments can be used to hold non-comestible materials (e.g. powders, solids and liquids), such as chemicals for mixing, adhesives, glues, grout, fillers, putty, two-part resins, etc.

[0069] When the cup embodiments are used for beverages, the beverage may be formed from a comestible substance (e.g. a beverage ingredient such as a dry powder, dry solid, liquid concentrate, etc.) that is held within the cup (i.e. held in a cup lower portion as described hereafter). The resultant beverage can be formed upon the pouring into the cup of a liquid (e.g. a hot, cold or room-temperature liquid such as water, milk, etc.), with the liquid mixing with the comestible substance to form the beverage.

[0070] A side from the lids, the cup embodiments as described herein can advantageously be formed as a one-piece cup. For example, each embodiment of the cup can be moulded (such as by injection moulding) from a suitable plastic, such as polyethylene, polypropylene, ABS resin, etc. The cup embodiments can also be formed to define an integrated compartment in the form of a lower chamber **12** for holding therein the comestible substance or non-comestible material prior to use. A sleeve (e.g. a label) **4** can also be added (e.g. mounted by friction, shrink-wrapping or adhesively) to the one-piece cup as described hereafter.

[0071] Referring firstly to FIGS. **1** to **4**, a first cup embodiment is shown in the form of a cup **2**. The cup **2** comprises a base defined by an internal base wall **14** (see esp. FIG. **4**) and a lower sidewall region **23**. The cup **2** further comprises a sidewall that is generally designated as **16**. The sidewall **16** extends up from the base **14**, **23**. The sidewall **16** can include the lower sidewall region **23** and can extend up to, e.g. so as to define, an upper rim **38** of the cup **2**. The upper rim **38** of cup **2** can be defined as an overturned lip of the sidewall **16**, as described below.

[0072] The cup **2** comprises a plurality of spaced, integrally formed ribs **18** that each project outwardly from the sidewall **16** (i.e. the ribs **18** can project outwardly in a radial direction from a central, vertically orientated axis of the cup **2**). The ribs **18** can provide both a structural and insulating effect, as described hereafter. For example, the ribs **18** can stiffen and strengthen the sidewall **16**. In the cup embodiment of FIGS. **1-4**, the ribs **18** extend for a portion of the sidewall length (i.e. they terminate above the lower end of sidewall **16** to thereby define the lower sidewall region **23**). When the base wall **14** of the cup **2** is oriented generally horizontally, the ribs **18** extend generally vertically in use.

[0073] As shown in FIG. **3**, the cup **2** can also comprise an externally mounted sleeve **4**. The sleeve **4** is configured to be located with respect to the ribs **18** (i.e. so as to surround the ribs **18**) and such that the sleeve is spaced from those portions **36** of the sidewall **16** that are located adjacent to but between the ribs **18**. This defines respective air gaps between the sleeve, adjacent ribs, and the sidewall. Such air gaps can provide an insulating effect to the cup in use to allow for user handling of the cup **2** (i.e. such that a user's hand does not directly contact the sidewall **16** of the cup **2** when the cup filled with a hot or cold liquid). For example, when a hot liquid is held in the cup **2**, the insulation effect provided by the arrangement of spaced ribs **18** allows the sleeve **4** to maintain a relatively cooler temperature than the sidewalls **16** of the cup (and vice versa for a cold liquid).

[0074] The sleeve **4** can be removably located to the cup **2**. In some forms, the sleeve may be bonded with, e.g. glue/adhesive, to e.g. the ribs **18** of the cup **2**. In other forms, the sleeve may be



removable from the cup. In a further form, the cup **2** may be used without a sleeve.

[0075] Whilst the sleeve **4** can extend for at least a portion of the length of the sidewall **16** (e.g. just for the length of the ribs **18**), typically the sleeve **4** extends for a full length of the sidewall **16**. Thus, the ribs **18** can be covered and thus hidden by the sleeve **4** to give the appearance of an ‘un-ribbed’ cup. The sleeve **4** can also give an ‘unbroken’ appearance to an outside wall of the cup **2** (i.e. the sleeve can define an outside ‘false’ wall of the cup **2**).

[0076] The sleeve **4** can also function as a label for the cup (i.e. it can be printed, patterned, coloured, etc. on its in-use outside face). When the sleeve **4** functions as a label for the cup, the label can comprise and display printed imagery and instructions—e.g. branding, advertising, cup contents, ingredients, directions for use, etc.

[0077] In some variations, the sleeve can comprise a moulded polypropylene material, wherein the label may be moulded into the sleeve, i.e. an in-mould label. In other variations, the sleeve may be made from a cardboard or waxed paper material, or a foamed (e.g. closed cell) polymer material, such as a polypropylene, polystyrene, etc., and/or from a shrink-type polymer sleeve. As above, the sleeve **4** can be externally textured to provide for improved handling and increased grip of the cup **2**. Thus, the sleeve **4** can be friction-or push-fit, shrink-wrapped or adhesively secured to the cup **2**. For example, the sleeve **4** can be fastened (e.g. adhesively or glued) to the ribs **18**. In some further variations, the sleeve **4** (i.e. label) can comprise perforations **5** for venting. As best illustrated in FIG. *5d*, an array of perforations (i.e. apertures) can be arranged on the sleeve, adjacent to the upper sidewall **20**, to allow for heat radiating from the sidewalls of the cup to more efficiently dissipate through the sleeve. The size and arrangement of the perforations illustrated in FIG. *5d* can be configured such that the dissipation of heat therethrough does not cause discomfort for a user holding the cup. In the illustrated form the perforations comprise a row of aligned elongate perforations extending about the sleeve **4** and proximal to an upper rim of the sleeve. In this form the perforations are located away from and higher than where a user's hand would be located in holding the cup. In some forms the perforations may be otherwise shaped and spaced apart around the surface of the sleeve.

[0078] The sidewall **16** is configured to have an in-use upper sidewall portion in the form of upper sidewall **20**, and an in-use lower sidewall portion in the form of the lower sidewall **22**. The upper sidewall **20** defines an upper cup portion in the form of an internal, upper compartment **10**, and the lower sidewall **22** defines a cup lower portion in the form of an internal, lower chamber **12**. As explained below, the upper compartment **10** can hold a liquid to be poured therein in use, whereas the lower chamber **12** can hold a comestible substance therein such as a beverage ingredient (i.e. the lower chamber **12** can define a ‘dosing chamber’ of the cup **2**).

[0079] The cup **2** is formed such that the upper **20** and lower **22** sidewalls are separated by an ‘internal’ rim **24** (i.e. the rim extends internally of the cup). The internal rim **24** is substantially perpendicular to each of the upper and lower sidewalls **20**, **22** to define thereon a generally horizontal internal ledge **44** (see FIG. *4*). The internal rim **24** in effect delineates the upper compartment **10** from the lower chamber **12**.

[0080] It will also be seen that each of the ribs **18** projects outwardly from, and extends for a length of, each of the upper **20** and lower **22** sidewalls. In this regard, each rib **18** extends for the full length of the upper sidewall **20** whereas each rib **18** terminates above the lower edge **25** of the lower sidewall **22** (see e.g. FIG. *4*). This arrangement in turn defines the ‘un-ribbed’ lower sidewall region **23**.

[0081] Typically, each of the upper sidewall **20**, internal rim **24**, lower sidewall **22** and base wall **14** are formed (e.g. moulded) to have a substantially identical wall thickness, although the upper rim **38** is formed with increased (e.g. near-double, or ‘folded-over’) thickness to provide rigidity to the cup **2** at its open upper end.

[0082] As best shown in FIG. *4*, each rib **18** is configured as a single rib that extends for most of the cup length. Each such single rib **18** can be provided with an elongate, straight distal (outside)

edge **34** that is generally parallel to the upper sidewall **20** but that tapers out with respect to the lower sidewall **22**. The distal edge **34** of each rib **18** thus tapers outwardly moving up from the base **14**, **23** of cup **2**. The degree of taper of the ribs **18** and upper sidewall **20** are similar (e.g. they can match). This also means that the upper rim **38** is located on the upper sidewall **20** distal to and radially further from a cup vertical centreline than the internal rim **24**. This outward tapering of the upper sidewall **20** helps facilitate removal of the internal lid **8** from within the cup (as described below).

[0083] As also shown in FIG. **4**, the lower sidewall **22** is inset with respect to the upper sidewall **20** (i.e. when the cup is viewed front-on). This defines lower chamber **12** as a distinct (e.g. generally cylindrical) ‘dosing chamber’ for holding a comestible substance (e.g. beverage ingredient) within the cup **2**. The lower chamber **12** can be provided with a predetermined volume (e.g. for accurate filling of the substance to be held therein).

[0084] Further, it will be seen in FIG. **4** that, as a result of the outward taper of each rib **18**, the upper sidewall **20** has a greater average diameter than that of the lower sidewall **22**. This arrangement gives rise to the inward ‘step’ of the side wall **16** (i.e. and thus results in ledge **44**). The ribs **18** are accordingly deepened adjacent to the lower sidewall **22** to ensure that the outside profile (i.e. distal edge **34**) of each rib **18** remains constant (e.g. straight) for the length of each rib. This also provides constant and even (e.g. straight) mounting surfaces for the sleeve **4**—i.e. to provide for ease of sleeve attachment to the ribs **18**, to provide for ease of holding and to enable clearly displayed labelling.

[0085] In a variation to that depicted, the lower sidewall **22** may project with a very slight and lesser degree of taper with respect to the base **14**—i.e. less than that of the upper sidewall **20**. In a further variation to that depicted, the lower sidewall **22** may project with the same degree of taper as the upper sidewall **20**, but inset from the upper sidewall **20**.

[0086] The outward taper of each rib **18** can also assist with stacking of multiple cups. The upper sidewall **20** having a greater average diameter than that of the lower sidewall **22** allows for e.g. a base of a first cup to be inserted and fit (i.e. stacked) within the larger upper rim **38** of a second cup. In this way, multiple cups can be fit within one another so as to stack a group of cups together.

[0087] As best shown in Detail AA of FIG. **5e**, the lower side wall of the cup can be sized with a diameter such that when stacked with a further cup, the lower sidewall **22** (at the base) can be supported by at least part of the internal ledge **44** of the further cup. Advantageously, this allows the weight of the cup to be supported by the internal ledge, and in the case of more than one cup being stacked together, the ledge **44** provides sufficient structural integrity to support the weight of more than one cup.

[0088] As shown in FIG. **2**, the cup **2** can be further provided with an upper lid **6** that is arranged to releasably locate about the upper rim **38** of the cup **2** (the location of the upper lid **6** is also indicated by a dotted line in FIG. **4**). The upper lid **6** can thus close the upper compartment **10** and hence close the cup **2** at its upper end (e.g. when the cup is in use). The upper lid **6** can be releasably press-, push-, etc. fit to the cup upper rim **38**. The upper lid **6** can be formed from a deformable polymeric material (e.g. thin plastic, elastomer, etc.) to be easily removed (e.g. to be peeled off the rim **38**) such as for liquid pouring therein. The upper lid **6** can be easily re-attached after its removal. The upper lid **6** can comprise a spout **7** that is integrally formed (e.g. moulded) therein. The spout **7** can allow a user of the cup to drink from the cup **2** (i.e. without removing the upper lid **6**).

[0089] As shown in FIG. **4**, the cup **2** can be further provided with an internal lid **8** that is arranged to locate on and about the internal ledge **44**. The internal lid **8** can be fabricated from, for example, a foil-type material, such as a polymer-coated (i.e. polymer reinforced) aluminium sheet-type material.

[0090] An annulus-shaped region defined at the underside periphery of the internal lid **8** can lie over the internal ledge **44**. This annulus region can be releasably bonded (e.g. with a tacky-type

adhesive) to the ledge **44** such that the internal lid **8** encloses and seals the lower chamber **12**. For example, the releasable bond may be such as to form a hermetic seal at the internal ledge **44**. The resultant hermetically-sealed chamber **12** can house a comestible or non-comestible material/substance therein, such as a hygroscopic material. The comestible material/substance can be a fixed dose of a beverage ingredient (e.g. a powder mixture, such as a premix).

[0091] The internal lid **8** also comprises an elongated tab **46** which, in-use, extends from the perimeter of the internal lid **8** and projects up and beyond the lid so as to enable an enlarged distal end **47** of the tab **46** to hook over the upper rim **38** of the cup **2**. As shown in FIG. **2**, the distal end **47** of tab **46** locates closely against the upper rim **38**, whereby it does not interfere with the location of the lid **6** on the upper rim **38**.

[0092] The tab **46** can be formed from the same material as internal lid **8** (e.g. tab **46** may either be attached to or be an integral continuation of the lid material). Alternatively, the tab **46** can be formed from a different material to internal lid **8** (e.g. it may comprise a material that has shape memory). In either case, as shown in FIG. **4**, the tab **46** is configured to sit closely against an internal wall surface **49** of the sidewall **16**, whereby the tab does not interfere with the volumetric space within the upper compartment **10**.

[0093] To open the lower chamber **12**, the distal end **47** of the tab **46** is released (e.g. prised away) from its hooked-over position on the upper rim **38**. This may occur prior to or after liquid has been poured into the open upper end of the cup **2**. The distal end **47** of tab **46** is then grasped and pulled up to remove (i.e. to peel away) the internal lid **8** from its (adhesive) engagement with the internal ledge **44** of the cup **2**, to thereby open the lower chamber **12** (see e.g. FIG. **3**). A gain, this may occur prior to or after liquid has been poured into the open cup. Removal of lid **8** can expose the comestible substance (e.g. powder, solid, liquid) that is held within the lower chamber **12** to a liquid. The liquid can either flow or be poured in to directly contact and mix with the comestible substance.

[0094] Reference with now be made to the cup embodiment of FIGS. **5a**, **5b** and **5c**, where like reference numbers are used to denote similar or like parts. Where the components are essentially the same as the cup embodiment of FIGS. **1** to **4**, they will not be redescribed, and the above description can be taken to apply equally to the cup embodiment of FIGS. **5a**, **5b** and **5c**.

[0095] In the cup embodiment of FIGS. **5a**, **5b** and **5c**, the cup **2'** comprises an inwardly concave base **14'** (see FIG. **5c**). The concavity can provide increased strength and rigidity to the base **14'**. The base **14'** can also be provided with a plurality of ridges **17** defined at an interior surface of the base (see FIGS. **5b** & **5c**). The ridges **17** can extend radially from a centre of the base **14'** and partway up a sidewall **16** of the cup **2'**. The ridges **17** can further stiffen and maintain the concavity of base **14'**.

[0096] The sidewall **16** of cup **2'** extends up from a periphery of base **14'** and comprises a plurality of spaced, integrally formed, and generally vertically extending external ribs **18** (i.e. that each project outwardly from the sidewall **16**). Again, in the cup **2'** of FIG. **5**, the ribs **18** extend for a portion of the sidewall length. However, in this embodiment of the cup **2'**, the ribs **18** terminate below the upper rim **38** of the cup **2'** to thereby define an 'un-ribbed' upper sidewall region **37**. In this regard, the ribs **18** extend right down to the base wall **14'** and thus extend for a full length of the lower sidewall **22**. Further, each rib **18** continues on past internal rim **24** and extends for a substantial length of the upper sidewall **20**. However, as above, the ribs **18** terminate prior to reaching the cup upper rim **38**. In fact, each rib **18** terminates at an upper internal rim **26** that is defined in the sidewall **16**. The upper internal rim **26** defines a lower edge of the un-ribbed upper sidewall region **37**. The upper internal rim **26** also defines an internal upper ledge **28** within the cup **2'**. In use, the internal upper ledge **28** can provide (or can function as) an upper boundary (e.g. a liquid pour line) of the upper compartment **10**. The ledge **28** can thereby provide a visual 'fill' cue to a user (or to an optical reader, etc.).

[0097] In some forms not shown, more than one internal ledge (similar to the upper ledge **28**) can

be provided on a wall of the cup. The ledge can take the form of a step or other type of deviation in diameter of the cup such that the ledge increases the hoop strength of the cup. For example, a further internal upper ledge as described above can be spaced below the internal upper ledge **28**, i.e. at a position closer to the base of the cup, so as to increase the hoop strength towards the middle of the cup.

[0098] Each rib **18** is configured such that, where it terminates at the upper internal rim **26**, its distal (outside) edge **34** generally aligns with the external surface of upper sidewall region **37** (see FIGS. **5a** & **5c**). This allows the sleeve to be flush-mounted over the full extent of the sidewall **16**.

[0099] In a variation, the ribs **18** can extend the full vertical length of the cup sidewall **16** (i.e. along the full length of both upper and lower sidewalls **20**, **22**).

[0100] As above, the sleeve **4** can be configured to extend from the base **14'** and to extend just for the length of the ribs **18** of cup **2'**. Alternatively, the sleeve **4** can be configured to extend for a full length of the sidewall **16** (i.e. the sleeve can extend right up to locate under the upper rim **38**).

[0101] As above for the cup embodiment **2** of FIGS. **1** to **4**, the outward taper of each rib in the embodiment **2'** can assist with stacking of multiple cups. In this embodiment, the lower side wall of the cup can be sized with a diameter such that when stacked with a further cup, the ribs **18** at the lower sidewall can be supported by at least part of the internal ledge **44** of the further cup.

[0102] Advantageously, this allows the weight of the cup to be supported by the internal ledge, and in the case of more than one cup being stacked together, the ledge **44** provides sufficient structural integrity to support the weight of more than one cup.

[0103] Rounds **19** can be provided on lower corners of the ribs. In addition to aiding manufacturability (i.e. tool design for injection moulding) of the cup, the rounds **19** also remove sharp corners which would otherwise be present at the lower corners of the ribs. Advantageously, the rounds **19** can also aid stacking of multiple cups, wherein the rounds can help guide the lower sidewall **22** of a first cup into the upper rim **38** of a second cup.

[0104] The cup embodiment **2'** of FIG. **5** can be otherwise as described above for FIGS. **1** to **4**.

[0105] Reference with now be made to the cup embodiment of FIGS. **6a**, **6b** and **6c**, where like reference numbers are used to denote similar or like parts. Where the components are essentially the same as the cup embodiments of FIGS. **1** to **5**, they will not be redescribed, and the above description can be taken to apply equally to the cup embodiment of FIGS. **6a**, **6b** and **6c**.

[0106] In the cup **2''** of FIG. **6**, the ribs **18** extend approximately halfway of the length of the upper sidewall **20** (i.e. approximately half the distance between internal rim **24** and upper rim **38** of the cup **2''**, with each rib **18** terminating at the upper internal rim **26**). In a further variation, the ribs **18** can extend approximately three-quarters of the way from the internal rim **24** to the upper rim **38**.

[0107] Thus, in comparison to the cup embodiment **2'** of FIG. **5**, the upper internal rim **26** in cup **2''** is spaced further from the upper rim **38** (i.e. much lower than the upper internal rim **26** of the FIG. **5** cup embodiment). In a related manner, the upper sidewall region **37** is much larger than the corresponding region in the FIG. **5** cup embodiment.

[0108] A gain, each rib **18** is configured such that, where it terminates at the upper internal rim **26**, its distal (outside) edge **34** generally aligns with the external surface of the upper sidewall region **37** (see FIGS. **6a** & **6c**). A gain, this allows the sleeve to be flush-mounted over the full extent of the sidewall **16**.

[0109] A gain, in the cup embodiment of FIG. **6**, the sleeve **4** can extend for the full vertical length of the cup sidewalls **16**, from the base **14'** to the in-use upper rim **38**. In other variations, the sleeve **4** can extend along a partial length of the cup sidewall, such as for the length of ribs **18**.

[0110] The cup embodiment **2''** of FIG. **6** can be otherwise as described above for FIGS. **1** to **5**.

#### Non-Limiting Examples

[0111] When using the cup **2** to prepare a beverage, the upper lid **6** can be removed from the upper rim **38** of the cup **2**, **2'**, **2''** (e.g. the cup can be supplied with the upper lid **6** already secured/attached thereto). Then, the upper compartment **10** can be filled with a liquid (e.g. hot or

cold water) to fill a given volume of the upper portion of the cup (e.g. the entire volume, or up to the level defined by the internal upper ledge **28**). In e.g. the cup **2** of FIGS. **1-4**, a water level mark can be included on the inner wall surface **49** to indicate to a user a suggested volume of liquid to prepare the beverage.

[0112] Once the liquid is introduced into the upper compartment **10**, the end **47** of elongate tab **46** can be released from its hooked position over the upper rim **38** (i.e. a user can bend the tab end **47** up into a ready-to-be-grasped position). Then, by pulling the tab **46** upwards (i.e. in a direction away from the chamber **12**), the internal lid **8** is removed (e.g. peeled-away) from the ledge **44** of internal rim **24**. This action exposes (opens) the chamber **12**, allowing the liquid from the upper compartment **10** to flow into the chamber **12**.

[0113] Where the chamber **12** holds a comestible substance (e.g. a beverage ingredient, such as a flavoured powder), the substance is exposed to the liquid, whereby the beverage ingredient combines and mixes with the liquid to form a beverage. The upper lid **6** can be re-attached, so that a user can now drink the beverage via the spout **7**.

[0114] In a variation, the internal lid **8** can be removed prior to pouring the liquid into the cup **2**, **2'**, **2''**.

[0115] Thus, when the liquid is poured into the cup, it directly contacts the beverage ingredient to combine and mix therewith to form a beverage.

[0116] The above examples of using the cup can be performed manually (e.g. a user can add liquid to the cup **2**, **2'**, **2''** from a kettle, jug, tap, etc.). Alternatively, the above examples can be automated, such as by an automatic beverage dispensing machine.

[0117] For example, in a beverage dispensing machine, the cup **2**, **2'**, **2''** can be employed in an open format (i.e. the upper lid can already be pre-removed therefrom).

[0118] The machine can automatically distribute liquid into the cup (e.g. at a fixed/predetermined volume). However, this step can involve some degree of manual intervention by a user, such as by the user placing the open cup under a distributor (e.g. a spout/outlet) of the machine. Once placed, the liquid can be distributed into the cup either manually (e.g. via a button, lever) or distribution can occur automatically.

[0119] When automatically implemented, the unhooking of the tab end **47** from its hooked position over the upper rim **38** can be manually performed by a user, or can be automatically implemented by (e.g. by a suitable 'grab' mechanism located within) the beverage dispensing machine. The machine can then pull the tab **46** away from a retained cup **2**, **2'**, **2''** to remove (e.g. peel away) the internal lid **8** from ledge **44**, to thereby expose the chamber **12**, and thus the comestible substance, to the liquid. As above, removal of internal lid **8** can occur after or prior to liquid in-pour to the cup.

[0120] The upper lid **6** can be supplied to and attached manually to the automatically filled and mixed cup, or the machine can attach the lid **6** to the cup **2**, **2'**, **2''**.

[0121] Variations and modifications may be made to the parts previously described without departing from the spirit or ambit of the disclosure.

[0122] For example, the cup **2**, **2'**, **2''** can take a non-circular form (i.e. non-circular cross-section). For example, the cup may take an ovular form, or take a regular or irregular polygonal form.

[0123] In a further variation, a sleeve **4** may not be disposed around the cup **2**, **2'**, **2''** (e.g. the cup can be supplied as shown in FIG. **2**, **5a** or **6a**). Thus, only the ribs **18** space and thus offset a user's hand from the (e.g. hot or cold) sidewall **16**. Additionally, in-mould labelling may be utilised to brand or decorate the cup **2**.

[0124] In the claims which follow and in the preceding description of the cup and method, except where the context requires otherwise due to express language or necessary implication, the word "comprise" or variations such as "comprises" or "comprising" is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the cup and method.

## Claims

1. A cup comprising: a base and a sidewall, the sidewall including an in-use upper sidewall portion that extends to an in-use upper rim of the cup, and an in-use lower sidewall portion, the upper and lower sidewall portions being separated by an internal rim, the lower sidewall portion defining a lower portion of the cup and the upper sidewall portion defining an upper portion of the cup; an internal lid for the cup lower portion, the internal lid arranged in use to locate at the internal rim; and an elongated tab which in use extends from the lid and projects beyond so as to enable the tab to hook over the upper rim of the cup.
2. A cup as claimed in claim 1, wherein the internal rim is substantially perpendicular to each of and connects the lower and upper sidewall portions to form an internal ledge.
3. A cup as claimed in claim 1, wherein the internal rim traverses a perimeter of the cup to define an annular ledge surface.
4. A cup as claimed in claim 1, wherein the internal lid is configured to be releasably bonded around its periphery to the internal rim to define the cup lower portion as a lower compartment.
5. A cup as claimed in claim 4, wherein the lower compartment is arranged to hold a comestible substance therein.
6. A cup as claimed in claims 1, wherein the elongate tab is configured to abut or closely face an inner wall of the upper sidewall portion in use.
7. A cup as claimed in claim 1, the cup further comprising an upper lid arranged to releasably locate about the upper rim of the cup to define the cup upper portion as an upper compartment.
8. A cup as claimed in claim 7, wherein a portion of the in-use elongate tab is secured under the upper lid in use.
9. A cup as claimed in claim 1, the cup further comprising a plurality of spaced ribs projecting outwardly from the sidewall and extending for at least a portion of a length of the sidewall.
10. A cup as claimed in claim 9, wherein the plurality of spaced ribs extend generally vertically in use of the cup when its base is oriented generally horizontally.
11. A cup as claimed in claim 10, wherein the plurality of ribs extend from the base, and wherein each rib terminates at an un-ribbed region of the upper sidewall portion.
12. A cup as claimed in claim 9, wherein each rib projects outwardly from an outer wall of the lower sidewall portion, an outer wall of the upper sidewall portion and an outer portion of the internal rib to define a single rib that has an elongate distal edge that is generally parallel to at least the upper sidewall portion.
13. A cup as claimed in claim 9, the cup further comprising an externally mounted sleeve configured to be located with respect to the ribs such that the sleeve is spaced from the sidewall adjacent to the ribs, the sleeve extending for at least a portion of the length of the sidewall.
14. A cup as claimed in claim 13, wherein the sleeve extends for a length of the sidewall beyond the ribs.
15. A cup as claimed in claim 13, wherein the sleeve extends for a full length of the side wall, from the base to the in-user upper rim of the cup.
16. A cup as claimed in claim 13, wherein the sleeve is further configured so as to function as a label for the cup.
17. A cup as claimed in claim 4, wherein the internal lid is releasably bonded around its periphery to the internal rim to form a hermetic seal between an underside of the internal lid and an upward surface of the internal rim.
18. A method for preparing a beverage in a cup as set forth in claim 1, the method comprising: opening the cup at the upper rim thereof; pouring a liquid into the open cup; releasing the elongate tab from its hooked position over the upper rim; pulling the elongate tab to remove the internal lid from the internal rim of the cup to expose a lower portion of the cup to the liquid.

**19.** A method as claimed in claim 18, wherein a comestible substance is located in a lower portion of the cup whereby, when the lower portion of the cup is exposed to the liquid, the comestible substance combines with the liquid to form a beverage.

**20.** A method as claimed in claim 18, wherein opening the cup at the upper rim includes removing an upper lid from the cup upper rim.

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