

Cooler for cylindrical objects

The invention relates to a container for cooling at least substantially cylindrical objects. The invention also relates to a cooling element for use in such a container and
5 to an assembly of container, cooling element and/or substantially cylindrical carafe-shaped bottle.

It is known to place bottles which have to be cooled in a cylindrical cooler. Said cooler can be provided with an insulating wall, such as a double wall within which a vacuum prevails, or within which an insulating material is accommodated. Ice can be
10 placed in the container together with the bottle. An alternative for such rigid bottle coolers is a flexible sleeve with cooling material, which can be slid around the bottle in a snug fit.

The known coolers have the disadvantage that for use of loose cooling material, such as ice, in the cooling chamber, said coolers will be made larger than the
15 circumference of the bottle. Because of the presence of solid coolant in the cooling chamber, while it is being inserted the bottle will be obstructed by said coolant and will assume an undefined position. Furthermore, the use of ice as the coolant has the disadvantage that after the ice melts it can run out of the cooler.

The known flexible cooling sleeve has the disadvantage that it is around the
20 bottle during pouring, which can make it difficult to take hold of the bottle.

Such an assembly is known. GB 2.068.521 discloses a jacket/container assembly, comprising a container such as a carafe and a jacket provided around it, an accommodation space being bounded between said jacket and said container, and a heat-exchanging element designed to be accommodated in said accommodation space
25 (also take heating into consideration). This publication discloses a barrel-shaped container around which a cooling jacket can be provided. The jacket is provided with a circumferential enlargement for receiving a coolant in it.

During use container and jacket are placed in each other, and the coolant is then inserted into the free end opening of the accommodation space. According to a
30 particular embodiment, the container and jacket are formed integrally. If desired, the jacket may be provided with a slit extending over a part of its height, for the purpose of receiving a tap fitted on the container.

A drawback of this design is that the cooling element has to be placed in the space between the container and the jacket. It is essential here for good contact to exist between the cooling element and the container. For that reason it is proposed in this British patent that said space simply be filled with ice cubes. However, it cannot be
5 guaranteed that the desired close contact between the coolant and the container is present. More particularly, this cannot be guaranteed if the volume of the coolant changes when it absorbs heat.

It is the object of the present invention to avoid this disadvantage.

It is also an object of the invention to provide a cooler in which a cylindrical
10 object to be cooled, such as a bottle or a carafe, can easily be taken hold of and placed in a clearly defined way in the cooler.

It is also an object to provide a cooler in which close contact of the cooling element with a bottle placed in the cooler is achieved.

It is a further object of the invention to provide a cooler in the case of which
15 coolant can be placed easily in and removed from said cooler.

To this end, a cooler according to the invention is characterized in that the container is provided with at least two cooling walls, each connected to the other in an annular lower side, each having an outside wall and two side edges extending from the lower side to an upper part of the wall, the side edges of adjacent cooling walls tapering towards each
20 other from the upper part to the lower side, and an accommodation chamber being formed in each cooling wall for accommodation of a removable cooling element, which accommodation chamber is bounded by a part of a substantially circular bottom contour, the outside wall and the side edge.

Owing to the fact that the side walls widen towards the lower side of the cooler, the
25 bottle or carafe is easy to insert into the cooler, the walls being capable of springing apart slightly along their V-shaped connection in order to make the cooling element lie snugly against the wall of the bottle. In this way the cooling elements provide optimum contact cooling, while the bottle or carafe is easy to insert into and remove from the cooler. Since the cooling elements remain behind in the cooler, they do not obstruct the user in the
30 process of pouring out.

The side walls define an accommodation space for the cooling elements, which are easy to place between the adjacent side walls through the relatively wide opening, while the user can easily reach the inside between the V-shaped connection between the adjacent

side walls, even in the case of relatively narrow coolers. In an alternative embodiment it is also possible to insert the cooling elements by way of a removable bottom of the accommodation space.

5 The two accommodation chambers can be connected by way of the circular bottom contour. The cooling elements can be designed so as to be separate, or can be connected to each other by way of a connecting part, so that effectively one single cooling element filling both chambers is formed.

10 The coolant can comprise a flexible bag which bounds a substantially cylindrical contact surface in the container so as to lie snugly against a cylindrical object placed in the container. Such triangular or trapezoidal cooling elements can be frozen at low temperature in the freezer compartment and retain their flexibility, so that they can rest closely against the circumference of the bottle or carafe placed in the container. A suitable cooling element is obtainable on the market under the brand name "Rapid Ice" and is made by Vacu Vin in the Netherlands.

15 In one embodiment the upper parts of the side walls are at a distance from each other which is less than or equal to the diameter of the bottom contour, and they are provided with a bevelled leading edge. By engaging with the bevelled leading edges, the broad bottom of a bottle or carafe to be placed in the cooler will push the side walls slightly apart and will automatically be guided by the leading edges themselves into the
20 correct position in the cooler.

The side walls along the lower side can be moulded from plastic in one piece. In an alternative embodiment the side walls are connected to each other along the lower side by way of a hinge, so that they can be swung apart in order to place the cooling elements and/or to accommodate a bottle or carafe. After placing, the side walls can be swung
25 towards each other again so that the cooling elements grip the bottle or carafe tightly.

A further object of the invention is achieved in the case of the jacket/container assembly described above in that heat-exchanging element comprises a flexible bag-shaped part filled with a heat-exchanging fluid, which bag-shaped part is permanently closed, in that the inner boundary of the jacket provided with heat-exchanging element
30 is smaller than the outer boundary of the container, in that said jacket is of such an elastically deformable design that said jacket can be placed with the heat-exchanging element on said container when said cooling element is being pressed against said container.

According to the present invention, the heat-exchanging element, like a cooling element, consists of a bag-shaped part which is permanently closed. An example of this is the Rapid ICE® being marketed by Vacu Products in Delft, the Netherlands. In order to ensure that the cooling element constantly makes close contact with the container, everything is designed in such a way that the inside of the jacket in the unloaded state is smaller than the outside of the container (if the cooling element is accommodated). The resilient elastic enlargement of the inside of the jacket means that the cooling element is pressed against the container with the same spring force, and close contact between the cooling element and the container is constantly present, so that optimum heat transfer can be achieved.

It will be understood that where a cooling element is described in the above a heating element can also be present.

According to an advantageous embodiment of the invention, the heat-exchanging element can be easily removed from and replaced in the jacket. That means that for cooling the cooling element is simply placed in, for example, a refrigerator. Before use the cooling element is inserted into the jacket and the jacket is placed on the container in the resiliently tightly fitting manner described above.

This resilient tight fit can be achieved in a large number of ways. According to a first variant of an embodiment of the present invention, the jacket comprises a split extending in the longitudinal direction over its full height. According to a further variant, the jacket consists of two parts which are connected to each other by means of a film hinge, everything being designed in such a way that in the unloaded state the two parts tend to move towards each other in order to bound an interior space which is smaller than the external dimensions of the container.

According to another variant, the jacket consists of two jacket parts hinged to each other, said jacket parts being accommodated in a tilting manner in a bottom part with raised edge. The tilting action here is preferably such that in the closed position of the jacket parts the hinge point between them is situated below the tilting points in the bottom part. This produces a permanent spring force which presses the heat-exchanging elements against the container.

According to a further advantageous embodiment of the invention, the container is of a design which tapers towards the opening side. It is therefore necessary to take

measures to prevent the jacket from moving relative to the container, driven by the spring force applied to it.

A possible of preventing this is to provide an inwardly projecting edge on the jacket on the lower side of the jacket. Another possibility, which can be used primarily in the case of an embodiment of the container which has a narrowed neck part, is to provide an extension on the jacket in such a way that said extension extends into the narrowed part.

According to another variant of the present invention, it is possible to provide a tapering container with a recessed edge part against which the jacket ultimately rests during use.

The container can be in any imaginable form and can be made of any imaginable material. According to an advantageous embodiment of the invention, the container is in the form of a carafe for receiving beverages to be cooled. More particularly, said carafe is made of a glass material.

The jacket can likewise be made of any imaginable material. It is preferably made of a plastics material and, according to a particular embodiment is made of a transparent plastics material.

According to the present invention, a closure for fitting on the container is also provided. Said closure consists of an external part which grips the neck of the container and a stopper fitted inside said external part. According to a particular embodiment of the invention, said stopper can be moved in the axial direction relative to the outside part. If desired, it is possible to design this movement to be driven by fold-over lips. Said fold-over lips are fixed both to the stopper and to the surrounding neck sealing part.

A number of embodiments of a container for cooling cylindrical objects according to the invention will be explained in greater detail with reference to the appended drawing. In the drawing:

Fig. 1 shows an exploded view of a carafe, the side walls and a bottom of a cooler according to the invention;

Fig. 2 shows a side view of the cooler, carafe and cooling elements;

Fig. 3 shows a cross section of the cooler and carafe according to Figure 2 along the line A-A;

Fig. 4 shows a perspective view of a hinged embodiment of a cooler according to the invention;

Fig. 5 shows two shapes of a cooling element according to the invention;

Fig. 6 shows a cross section of the cooling elements of Fig. 5;

Fig. 7 shows, illustrated separately, various parts of a first embodiment of a jacket/container assembly;

Fig. 8 shows the assembly according to Fig. 1 in the assembled state;

5 Figs 9a/9b show a further variant of a jacket/container assembly;

Fig. 10 shows a third embodiment of the present invention.

Fig. 11 shows diagrammatically the jacket of a fourth embodiment of the invention;

Fig. 12 shows a further assembly according to the invention.

10 Fig. 13 shows the assembly according to Fig. 6 during insertion or removal of the carafe; and

Fig. 14 shows diagrammatically the position of the jacket parts when the carafe has been inserted; and

In Fig. 8 the jacket/container assembly according to the invention is shown in its entirety by 51.

15 Figure 1 shows a container or cooler 1 according to the invention, with two cooling walls 3, 4, which are connected to each other by way of an annular lower side 5. Each cooling wall 3, 4 has two side edges 7, 8; 9, 10, which extend from a relatively narrow upper part 11, 12 of the walls to the annular lower side 5. The walls 7, 9 and 8, 10 of the adjacent cooling walls 3, 4 taper from the upper sides 11, 12 in a V shape towards each other so as to converge in a rounded connecting point 14. A removable bottom ring 15 closes off the lower side of the cooler.

Accommodation chambers 21, 22 are formed between an outside wall 17, 18 of the cooling walls, a bottom circular contour 19 of the cooling walls 3, 4 and the side edges 7, 8; 9, 10, in which accommodation chambers flexible cooling elements 24, 25 (see Fig. 2) are placed. Along the cylindrical contact surface 26, 27 the Cooling Elements rest snugly against the bottle or carafe 2 placed in the cooler 1.

On the upper side 11, 12 each side wall 3, 4 has a bevelled leading edge 30, 31. The distance W between the upper sides 11, 12 is slightly less than the diameter D of the circular contour 19, so that when the carafe 2 is being inserted into the cooler 1 the bevelled lower side 32 of the carafe is guided along the leading edge 30, 31, so that the carafe 2 is automatically taken into the correctly centred position relative to the cooler 1. The walls 3, 4 are elastically forced slightly apart here, and the carafe slides into the cooler with the circumference in close contact with the cooling elements 24, 25. The cooling

elements are pushed into close contact with the wall of the carafe by the pre-tension applied by the carafe to the flexible walls 3, 4.

Figure 3 shows how on the lower side of the cooler 1 near the circular contour 5 the inside walls 34, 35 of the cooling walls 3, 4 can form an annular supporting edge which grips tightly on the bottom circumference of the carafe 2 or to hold the latter tightly in the correct position.

Figure 4 shows an embodiment in which the cooling walls 3, 4 are connected by way of a hinge 37 on their lower sides and can be opened along said hinge 37 in the direction of the arrows P, for example in order to receive a carafe 2 or to receive the cooling elements 24, 25, and can subsequently be swung back again in order to make the cooling elements 24, 25 engage tightly with the carafe 2.

Figure 5 shows diagrammatically a cooling element 38 for use in the cooler 1 according to the invention with a substantially triangular shape, and also a trapezoidal cooling element 39. These cooling elements are of a composition which is known per se and can comprise a bag-shaped plastics covering containing a cooling fluid such as glycol, a gel or water.

Although the invention is described with reference to a cooler with two cooling walls 3, 4, it is possible to use a number of such cooling walls. The cooling elements 24, 25 can easily be inserted into the accommodation chambers 21, 22 by way of the open upper side and between the edges 7, 9; 8, 10. It is also possible to design an embodiment in which the cooling elements 24, 25 can be inserted into the accommodation chambers 21, 22 after removal of the bottom ring 15.

Figure 5 shows finally a cross section of a cooling element with an outer jacket 40, a layer with coolant 41 and an insulating layer 42 made of a closed-cell foam. The insulating layer 42 faces away from the carafe during use and prevents condensation from forming against the cooling surface of the cooling element 41, which lies against the carafe 2.

As is also clear from Fig. 7, this consists of a container 52 such as a glass carafe. A jacket 53 is present, consisting of a part extending over substantially 360° with a split 56 extending over the full height of the jacket 53. Making this split of some width enables the user to see how high the liquid level is in the container, assuming that the container is liquid-transparent. Of course, the jacket can also be made transparent. Jacket 3 is provided with a constricted extension 57.

In addition, a cooling sleeve 55 is present, consisting of an open annular plastics sleeve containing a cooling fluid alone or combined with a carrier accommodating a cooling fluid, such as a foam material. In the example illustrated the sleeve is shown open, but it will be understood that a closed design (possibly elastic) may be present if desired.

5 An accommodation space 54 for positioning sleeve 55 is present in the jacket 53. After sleeve 55 has been inserted into accommodation space 54, jacket 53 including sleeve 55 can be placed over carafe 52 and will be fixed in its correct position by the fact that the constricted part 57 goes into the constriction near the upper side of the neck.

The assembly described above is used as follows:

10 The sleeve 55 is kept in the refrigerator so that it can acquire a relatively low temperature. When it is to be used, the sleeve is inserted into the jacket 53 and placed around the empty or filled carafe 52. Through the spring action of jacket 53, the sleeve 55 is pressed tightly against the carafe 52, so that optimum heat exchange with the contents of said carafe can occur. The carafe is preferably made of a glass material which has
15 relatively good heat-conducting and cold-conducting properties.

As shown, a closure 58 is present to seal the opening of the carafe. Said closure consists of an outer rim 59, preferably made of rubber-like material, to be fitted in the neck. Furthermore, a stopper 60, which can be moved in the direction of arrow 70 (axially) in the outer rim 59, is present. Between stopper 60 and outer rim 59 extend fold-
20 over lips 67 which, on the one hand, permit resilient closure and, on the other hand, make it possible to achieve a stable opened-out position. If desired, measures can be taken to make the pouring easier, in other words sharp pour-out edges can be provided. The stopper 60 can be moved away from the outer rim 59 by means of a grip 68.

Figs 9a, 9b illustrate a further variant of the invention. The assembly shown there is
25 illustrated in its entirety by 61 and consists of a jacket 63 and a carafe 62. The jacket 63 is provided on its bottom end with an inwardly extending edge 66. The cooling sleeve is indicated by 65. The accommodation space for the sleeve 65 is indicated by 64. It is clear from a comparison of Figs 9a and 9b how everything will be placed in position. Edge 66 is pressed outwards under spring load by the shape of the container 62 and on reaching the
30 bottom of said container snaps back elastically under spring load. The jacket 63 consists of two halves, which on the upper side are hinged together under spring load. Sliding of the jacket upwards must prevent by that the edge 66 grips under the container 62. The inwardly extending edge 16 also functions as a drip catcher. Moreover, when a bottle is

placed on a relatively hard base some shock absorption can be obtained by this edge, in particular if said edge is provided with a rubber part. Furthermore, such an edge will give the jacket greater strength, i.e. more resistance to outward movement, so that the cooling sleeve can be pressed with greater force against the container.

5 Fig. 10 illustrates a further variant. In this case the assembly is indicated in its entirety by 21 and comprises a container or carafe 72 and a jacket 73. The carafe 72 is provided with a protruding part 76, which serves as a stop for the upper side of jacket 73. A sleeve 75 is present, being wedged by the jacket 73 against the container 72. The accommodation space for the sleeve 75 is indicated by 74.

10 Fig. 11 shows a further variant of the present invention. The jacket 33 shown there consists of two jacket parts 88 and 89, which are connected to each other by a film hinge 87. The above is designed in such a way that the jacket parts 88 and 89 tend towards the closed position so as to press a cooling element accommodated between them against the container concerned.

15 Figs 12 – 14 show a further variant of the invention. In this case the assembly is indicated in its entirety by 91. The jacket 103 consists of jacket parts 108 and 109 which are connected to each other by a hinge 107. Said parts are provided in a bottom part 108, in which they can tilt about tilting point 109. The carafe is indicated by 92, and the cooling sleeve by 95.

20 An accommodation space 104 for receiving the cooling sleeve 95 is present in the jacket parts 108 and 109. After the sleeve 95 has been placed, the carafe or container 92 is inserted in the position in which the jacket parts 108 and 109 are apart, as shown in Fig. 12 (see Fig. 13). The jacket parts are then folded against each other, as shown in Figure 14. Figure 14 also shows diagrammatically the tilting points 99 and the hinge point
25 107. It is clear from this figure that the hinge point 107 lies below the tilting points 99, so that wedging action of the jacket parts 98 and 99 is achieved. It is clear that as soon as the tilting points 99 and hinge point 107 are in line with each other, during the further movement of the jacket parts 108 and 109 towards each other a more locking movement will be obtained (knee lever or toggle effect) because of the drop of hinge point 107
30 relative to the tilting points 99.

After the above, further variants which are obvious after the above description will immediately be clear to the person skilled in the art. Rights are also expressly requested

for variants which the measures of the subclaims describe, independently of the main claim.

Claims

1. Container (1) for cooling at least substantially cylindrical objects (2), characterized in that the container is provided with at least two cooling walls (3, 4), each
5 connected to the other in an annular lower side (5), each having an outside wall (17, 18) and two side edges (7, 8, 9, 10) extending from the lower side (5) to an upper part (11, 12) of the wall, the side edges (7, 8, 9, 10) of adjacent cooling walls (3, 4) tapering towards each other from the upper part (11, 12) to the lower side (5), and an accommodation chamber (21, 22) being formed in each cooling wall (3, 4) for accommodation of a
10 removable cooling element (24, 25), which accommodation chamber is bounded by a part of a substantially circular bottom contour (19), the outside wall (17, 18) and the side edges (7, 8, 9, 10).
2. Container (1) according to Claim 1, in which the cooling element comprises a flexible bag which bounds a substantially cylindrical contact surface (26, 27) in the
15 container so as to lie snugly against a cylindrical object (2) placed in the container (1).
3. Container (1) according to Claim 1 or 2, in which the upper parts (11, 12) of the side walls (3, 4) are at a distance (w) from each other which is less than or equal to a diameter (D) of the bottom contour (19), and are provided with a bevelled leading edge (30, 31).
- 20 4. Container (1) according to one of the preceding claims, in which the side walls (3, 4) in side view are of a substantially rounded triangular shape.
5. Container (1) according to one of the preceding claims, in which the side walls (3, 4) along the bottom contour (19) form a contact surface (34, 35) for engaging tightly with an object (2) placed in the container (1).
- 25 6. Container (1) according to one of the preceding claims, in which the container (1) is provided with a removable bottom surface (15).
7. Container according to one of the preceding claims, in which the cooling walls (3, 4) are hinged to each other.
8. Cooling element (38, 39) composed of a flexible bag for accommodation in an
30 accommodation chamber of a container, with a substantially triangular or trapezoidal shape.
9. Assembly of a container (1) for cooling at least substantially cylindrical objects, with at least two cooling walls (3, 4) each connected to the other in an annular lower side

(5), each having an outside wall (3, 4) and two side edges (7, 8, 9, 10) extending from the lower side (5) to an upper part (11, 12) of the wall, the side edges (7, 8, 9, 10) of adjacent cooling walls (3, 4) tapering towards each other from the upper part (11, 12) to the lower side (5), and an accommodation chamber (21, 22) being formed in each cooling wall (3, 4) for accommodation of a removable cooling element (24, 25), which accommodation chamber is bounded by a part of a substantially circular bottom contour (19), the outside wall (17, 18) and the side edge (7, 8, 9, 10), and a flexible bag-shaped cooling element (24, 25) in the accommodation chamber.

10. Assembly of a container for cooling at least substantially cylindrical objects, with at least two cooling walls (3, 4) each connected to the other in an annular lower side (5), each having an outside wall (17, 18) and two side edges (7, 8, 9, 10) extending from the lower side (5) to an upper part (11, 12) of the wall, the side edges (7, 8, 9, 10) of adjacent cooling walls (3, 4) tapering towards each other from the upper part (11, 12) to the lower side (5), and an accommodation chamber (21, 22) being formed in each cooling wall (3, 4) for accommodation of a removable cooling element (24, 25), which accommodation chamber is bounded by a part of a substantially circular bottom contour (19), the outside wall (17, 18) and the side edges (7, 8, 9, 10), and a removable carafe-shaped cylindrical object with a slim neck near the upper side of the side walls and a relatively wide pouring opening.

11. Jacket/container assembly (51, 61, 81), comprising a container (52, 62, 82) such as a carafe, and provided around it a jacket (53, 63, 73, 83), in which an accommodation space (54, 64, 74) is bounded between said jacket and said container, and also a heat-exchanging element (55) designed to be accommodated in said accommodation space, characterized in that said heat-exchanging element comprises a flexible bag-shaped part filled with a heat-exchanging fluid, which bag-shaped part is permanently closed, and in that said jacket is of such an elastically deformable design that it can be placed with the heat-exchanging element on said container when said heat-exchanging element is being pressed against said container.

12. Assembly according to Claim 11, in which said heat-exchanging element is designed in such a way that it can be removed from/placed in said jacket without damage.

13. Assembly according to one of the preceding claims, in which said jacket comprises a split (56) extending in the longitudinal direction.

14. Assembly according to one of the preceding claims, in which the container is designed so that it tapers towards the opening side, and the jacket is designed with positioning means for placing relative to said container.

15. Assembly according to Claim 14, in which said positioning means comprise an edge (16) provided near the lower side of the jacket and extending below the container.

16. Assembly according to Claim 14 or 15, in which said carafe comprises a circumferential constriction near its neck, and said positioning means comprise a part (57) of said jacket extending into said circumferential constriction.

17. Assembly according to one of the preceding claims, in which said jacket consists of two halves (88, 89) resiliently connected to each other.

18. Assembly according to one of the preceding claims, in which the inner boundary of the jacket provided with heat-exchanging element is smaller than the outer boundary of the container.

19. Assembly according to one of the preceding claims, in which the container comprises a glass container.

20. Assembly according to one of the preceding claims, in which said jacket comprises a plastic part.

21. Assembly according to one of the preceding claims, in which said container comprises a closure (58) with a neck sealing part (59) on the outside which grips the neck of said container and a stopper (60) fitted on the inside, which stopper (60) is movable axially (70) relative to said neck sealing part.

22. Assembly according to Claim 20, in which fold-over lips (67) are provided between said neck sealing part (59) and said stopper (60).