METHOD FOR STORING PEROXIDE

The invention concerns a method for storing a composition comprising at least one peroxide, said method comprising the step of providing at least one hollow container (100) and storing the composition therein, wherein the container (100) is substantially rectangular cuboid shaped and comprises a top wall (110) with at least one opening (112) configured to dispense the composition in or out of the container (100), a bottom wall (120) opposed the top wall (110), a first pair of opposing side walls (130, 140) and a second pair of opposing side walls (150, 160) connecting the top wall (110) with the bottom wall (120) wherein each side wall is connected to two other side walls constituting a peripheral wall, characterized in that at least one side wall of the container (100) comprises at least one structural reinforcement selected from an inwardly projecting hollow profiled wall portion, an outwardly projecting hollow profiled wall portion, or a combination thereof.
Method for storing peroxide

This application claims priority to the European patent application No. 11164818.4 filed on May 4, 2011, the whole content of this application being incorporated herein by reference for all purposes.

FIELD OF THE INVENTION

The invention relates to the use of a container for storage of a composition comprising at least one peroxide.

BACKGROUND OF THE INVENTION

Containers, usually polymer containers, are used for storage and/or transport of peroxides.

The oxygen-oxygen chemical bond of peroxide can be unstable, which makes many peroxides unstable and hazardous materials. Especially when transported to and from varying climates and/or altitudes, the peroxide may undergo chemical reaction and pressure within the container can greatly vary, for example by buildup of oxygen gas. Furthermore, when stacking containers on top of each other, the lower containers may buckle and fail under top-loading compression.

A cost-effective container from transport and storage perspective is one that allows efficient stacking with minimal loss of interstitial volume between the containers. A cost-effective container from production perspective is one that uses maximizes internal volume for minimal material, and preferably has thin walls.

There is therefore a need to improve the containers of the prior art in terms of efficient storage and/or transport. More specifically, there is a need for like-sized containers to maintain a reduced amount of plastic, yet achieve an increased top-loading capacity.

It is accordingly one of the objects of the present invention to overcome or ameliorate at least one of the disadvantages of the prior art, or to provide a useful alternative.

SUMMARY OF THE INVENTION

The present inventors have now found that one or more of these objects can be obtained by storing a peroxide composition in a container in a method as defined in the appended claims.
A first aspect of the present invention concerns a method for storing a composition comprising at least one peroxide, said method comprising the step of providing at least one hollow container (100) and storing the composition therein, wherein the container (100) is substantially rectangular cuboid shaped and comprises a top wall (110) with at least one opening (112) configured to dispense the composition in or out of the container (100), a bottom wall (120) provided opposite the top wall (110), a first pair of opposing side walls (130, 140) and a second pair of opposing side walls (150, 160) connecting the top wall (110) with the bottom wall (120) wherein each side wall is connected to two other side walls constituting a peripheral wall, characterized in that at least one side wall of the container (100) comprises at least one structural reinforcement selected from an inwardly projecting hollow profiled wall portion, an outwardly projecting hollow profiled wall portion, or a combination thereof.

The inventors have surprisingly found that storing a peroxide composition in such a container provides an ideal trade-off between production costs, storage costs, transport costs and container strength, specifically when under top-loading compression.

According to a second aspect, the present invention also encompasses a method for storing a composition comprising at least one peroxide, said method comprising the step of providing at least one hollow container (100) and storing the composition therein, wherein the container (100) is substantially rectangular cuboid shaped and comprises a top wall (110) with at least one opening (112) configured to dispense the composition in or out of the container (100), a bottom wall (120) provided opposite the top wall (110), a first pair of opposing side walls (130, 140) and a second pair of opposing side walls (150, 160) connecting the top wall (110) with the bottom wall (120) wherein each side wall is connected to two other side walls constituting a peripheral wall, characterized in that said container (100) is pressurized before storage.

The inventors have surprisingly found that pressurizing the container before storage improves container strength, specifically when under top-loading compression.

The independent and dependent claims set out particular and preferred features of the invention. Features from the dependent claims may be combined with features of the independent or other dependent claims as appropriate.

The above and other characteristics, features and advantages of the present invention will become apparent from the following detailed description, taken in
conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention. The reference figures quoted below refer to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 represents a schematic perspective view of a container which is pressurized according to an embodiment of the invention.

Figures 2A and 2B represent schematic perspective views of a container wherein two side wall of the container comprises each an inwardly projecting hollow profiled wall portion, according to an embodiment of the invention.

Figures 3A and 3B represent schematic perspective views of a container wherein the side wall of the container comprises each at least one structural reinforcement according to an embodiment of the invention.

Figures 4A and 4B represent schematic perspective views of a container wherein two side wall of the container comprises each at least six structural reinforcements according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

When describing the invention, the terms used are to be construed in accordance with the following definitions, unless a context dictates otherwise.

Unless otherwise defined, all terms used in disclosing the invention, including technical and scientific terms, have the meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. By means of further guidance, term definitions are included to better appreciate the teaching of the present invention.

In the following passages, different aspects of the invention are defined in more detail. Each aspect so defined may be combined with any other aspect or aspects unless clearly indicated to the contrary. In particular, any feature indicated as being preferred or advantageous may be combined with any other feature or features indicated as being preferred or advantageous.

Reference throughout this specification to "one embodiment" or "an embodiment" means that a particular feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, appearances of the phrases "in one embodiment" or "in an embodiment" in various places throughout this specification are not necessarily all referring to the same embodiment, but may. Furthermore, the particular features, structures or characteristics may be combined in any suitable manner, as would be apparent to a person skilled in the art from this disclosure,
in one or more embodiments. Furthermore, while some embodiments described herein include some but not other features included in other embodiments, combinations of features of different embodiments are meant to be within the scope of the invention, and form different embodiments, as would be understood by those in the art.

The terms "comprising", "comprises" and "comprised of" as used herein are synonymous with "including", "includes" or "containing", "contains", and are inclusive or open-ended and do not exclude additional, non-recited members, elements or method steps. It will be appreciated that the terms "comprising", "comprises" and "comprised of" as used herein comprise the terms "consisting of", "consists" and "consists of."

As used in the specification and the appended claims, the singular forms "a", "an," and "the" include plural referents unless the context clearly dictates otherwise. By way of example, "a container" means one container or more than one container.

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as is commonly understood by one of skill in the art. All publications referenced herein are incorporated by reference thereto.

Throughout this application, the term 'about' is used to indicate that a value includes the standard deviation of error for the device or method being employed to determine the value.

The recitation of numerical ranges by endpoints includes all integer numbers and, where appropriate, fractions subsumed within that range (e.g. 1 to 5 can include 1, 2, 3, 4 when referring to, for example, a number of elements, and can also include 1.5, 2, 2.75 and 3.80, when referring to, for example, measurements). The recitation of end points also includes the endpoint values themselves (e.g. from 1.0 to 5.0 includes both 1.0 and 5.0). Any numerical range recited herein is intended to include all sub-ranges subsumed therein.

According to a first aspect, the present invention concerns a method for storing a composition comprising at least one peroxide, said method comprising the step of providing at least one hollow container and storing the composition therein, wherein the container is substantially rectangular cuboid shaped and comprises a top wall with at least one opening configured to dispense the composition in or out of the container, a bottom wall provided opposite the top wall, a first pair of opposing side walls and a second pair of opposing side walls connecting the top wall with the bottom wall wherein each side wall is connected
to two other side walls constituting a peripheral wall, characterized in that at least one side wall of the container comprises at least one structural reinforcement selected from an inwardly projecting hollow profiled wall portion, an outwardly projecting hollow profiled wall portion, or a combination thereof.

The present invention also encompasses, in a second aspect a method for storing a composition comprising at least one peroxide, said method comprising the step of providing at least one hollow container and storing the composition therein, wherein the container is substantially rectangular cuboid shaped and comprises a top wall with at least one opening configured to dispense the composition in or out of the container, a bottom wall provided opposite the top wall, a first pair of opposing side walls and a second pair of opposing side walls connecting the top wall with the bottom wall, wherein each side wall is connected to two other side walls constituting a peripheral wall, characterized in said container is pressurized before storage. According to an embodiment at least one side wall (130, 140, 150, 160) of the pressurized container comprises at least one structural reinforcement selected from an inwardly projecting hollow profiled wall portion, an outwardly projecting hollow profiled wall portion, or a combination thereof.

As used herein, the terms "container" or "tank" or "jerry can" are used interchangeably, and refer to any container suitable for storing or transporting a composition comprising at least one peroxide, preferably a liquid composition comprising at least one peroxide, preferably a liquid composition comprising hydrogen peroxide.

As used herein, the terms "rectangular cuboid" or "right rectangular prism" or "rectangular box" are used interchangeably and refer to a solid figure bound by six faces, forming a convex polyhedron, wherein these six faces are each a quadrilateral, wherein the undirected graph formed by the vertices and edges of the polyhedron is isomorphic to the graph of a cube, wherein all angles are right angles, and wherein opposite faces of a cuboid are equal.

The container can be substantially rectangular cuboid shaped, whereby the four side walls, the top wall and the bottom wall may be irregularly shaped but generally correspond to the faces of a rectangular cuboid. When in the remainder of this description, reference is made to a plane or face corresponding to a wall of the container, this refers to the corresponding plane and face of the smallest rectangular cuboid that surrounds the container. Each wall of the container,
corresponds to a face of this smallest rectangular cuboid, and each face
 corresponds to a plane, an embodiment thereof is illustrated in Figure 1.

The edges and corners of the container can be rounded off. The walls can
be overall convex or concave instead of planar.

The walls of the container are so connected to form a unitary construction.

In a preferred embodiment of the invention, the opening in the top wall of
the container is adapted to dispense the composition in and out of the container.
In a preferred embodiment of the invention, the opening in the top wall of
the container is configured to be coupled with a seal, lid or cap. Preferably, the
opening in the top wall of the container is adapted to be coupled with a cap. In a
preferred embodiment of the invention, the top wall comprises a handle.

As used herein, the terms "inwardly projecting hollow profiled portion" or
"concave portion" are used interchangeably and refer to a surface portion of the
container's wall that is curved inwards to the inside of the container.

As used herein, the terms "outwardly projecting hollow profiled portion"
or "convex portion" are used interchangeably and refer to any surface portion of
the container's wall that is curved outwards to the outside of the container.

As used herein, the term "peroxide" refers to any compound containing an
oxygen-oxygen single bond or the peroxide anion ([O-O]²⁻), and comprises
hydrogen peroxide (H₂O₂), inorganic peroxides and organic peroxides. As used
herein, the term "inorganic peroxide" comprises components of the general
formula M₂O₂ (wherein M is a metal selected from the group of alkaline metals,
such as for example Na) or M*O₂ (wherein M* is a metal selected from
the group of alkaline earth metals, such as for example Ba, Ca or Mg). As used
herein, the term "organic peroxide" comprises components of the general
formula R'OOR, where R¹ and R² are independently selected organic groups.
Preferably, these organic groups are selected from the list comprising : hydrogen,
linear or branched alkyl groups having 1 to 30 carbon atoms, an aryl group, an
aryloyl group, an acyl group. Any such organic groups may include other
substituents, such as halogens. Non-limiting examples of organic peroxides
suitable in the present invention can be dialkyl peroxides, diaryloyl peroxides
diacyl peroxides, peracids, peracid esters, ketone peroxides, peroxyesters,
peroxyketsals, peroxydicarbonates and combinations thereof.

In an embodiment of the invention, said inwardly or outwardly projecting
hollow profiled wall portion is selected from the group comprising : a spherical
dome, a spheroidal dome, and an ellipsoidal dome.
As used herein, the terms "spherical dome" refers to the geometrical surface which can be obtained by sectioning off a portion of a sphere with an intersecting plane. As used herein, the terms "spheroidal dome" refers to the geometrical surface which can be obtained by sectioning off a portion of a spheroid with an intersecting plane. As used herein, the terms "ellipsoidal dome" refers to the geometrical surface which can be obtained by sectioning off a portion of an ellipsoid with an intersecting plane.

Preferably, the inwardly or outwardly projecting hollow profiled wall portion comprises a major axis that is perpendicular to the plane of the bottom wall of the container.

Preferably, the side walls of the first pair of opposing side walls have a smaller width than the side walls of the second pair of opposing side walls.

As used herein, the term "width of a side wall" refers to the length of the edge between the plane of the side wall and the plane of the bottom wall. As used herein, the term "height of a side wall" refers to the length of the edge between the plane of the side wall and the plane of a neighboring side wall. In an embodiment, the width of the first pair of opposing side walls is more than 10% smaller than the width of the second pair of opposing side walls. In a preferred embodiment, the width of the first pair of opposing side walls is more than 25% smaller than the width of the second pair of opposing side walls. In a more preferred embodiment, the width of the first pair of opposing side walls is more than 50% smaller than the width of the second pair of opposing side walls.

Preferably, each side wall of the first pair of opposing side walls comprises at least one inwardly projecting hollow profiled wall portion.

Preferably, each side wall of the second pair of opposing side walls comprises at least one inwardly projecting hollow profiled wall portion.

In an embodiment, each side wall of the second pair of opposing side walls comprises at least one inwardly projecting hollow profiled wall portion and at least one outwardly projecting hollow profiled wall portion.

In another embodiment, each side wall of the second pair of opposing side walls comprises at least two inwardly or outwardly projecting hollow profiled wall portions, preferably at least three inwardly or outwardly projecting hollow profiled wall portions, preferably at least four inwardly or outwardly projecting hollow profiled wall portions, preferably at least five inwardly or outwardly projecting hollow profiled wall portions, preferably at least six inwardly or outwardly projecting hollow profiled wall portions.
In an embodiment, each side wall of the second pair of opposing side walls comprises at least two inwardly projecting hollow profiled wall portions and at least two outwardly projecting hollow profiled wall portions, preferably at least three inwardly projecting hollow profiled wall portions and at least three outwardly projecting hollow profiled wall portions.

Preferably, each side wall of the second pair of opposing side walls comprises at least three inwardly projecting hollow profiled wall portions and at least three outwardly projecting hollow profiled wall portions, wherein these hollow profiled wall portions are arranged in two columns perpendicular to the plane of the bottom wall and three rows parallel to the plane of the bottom wall, and wherein within each row and each column inwardly and outwardly projecting hollow profiled wall portions are alternated.

Preferably, at least one inwardly projecting hollow profiled wall portion of a side wall is opposite an outwardly projecting hollow profiled wall portion of the opposite side wall.

More preferably, all inwardly projecting hollow profiled wall portions of a side wall are opposite outwardly projecting hollow profiled wall portions of the opposite side wall and all outwardly projecting hollow profiled wall portions of said side wall are opposite inwardly projecting hollow profiled wall portions of said opposite side wall.

In a preferred embodiment of the invention, opposing inwardly or outwardly projecting hollow profiled wall portions for a pair of opposing side walls are complementary, e.g. one is inwardly projecting and the other is outwardly projecting. This has the advantage that multiple containers according to the invention can be stacked closed together with minimal interstitial space between the containers. Furthermore, this has the advantage that pressure applied to the top wall of the container can be distributed among said container and its neighboring containers. An additional advantage is that neighboring containers will have a reduced risk of sliding with respect to one another during transportation, since they are locked more strongly into place.

Preferably, said inwardly or outwardly projecting hollow profiled wall constitute at least 20% of the surface of a side wall, preferably 40% of the surface of a side wall, more preferably 60% of the surface of a side wall.

These percentages are calculated as the area of orthogonal projection of the inwardly or outwardly projecting hollow profiled wall portions on the
corresponding face of the wall divided by the total area of the corresponding face of the wall.

The present invention also encompasses any of the methods as described above, comprising the step of pressurizing the container before storage.

In one embodiment of the invention, the container is pressurized to obtain an internal pressure of about 1.25 bar.

In a preferred embodiment of the invention, the container has an inner volume between 5 liter and 220 liter.

In a preferred embodiment of the invention, the container is made from a polymer composition. Preferably, this polymer composition is thermoplastic. Preferably, this polymer composition comprises polyethylene. Even more preferably, this polymer composition comprises high density polyethylene (HDPE). In one embodiment of the invention, the polyethylene container can be produced by blow-molding.

The invention can be understood in detail with reference to the embodiments illustrated in Figures 1 to 4.

Figure 1 represents a schematic perspective view of a container 100, which is pressurized according to an aspect of the invention. The container 100 comprises a top wall 110, which comprises an opening 112 that is coupled with a cap 113, and which comprises a handle 114. Opposite the top wall 110, the container 100 comprises a bottom wall 120. A first pair of opposing side walls 130, 140 and a second pair of opposing side walls 150, 160 are connected to each other, to the top wall 110 and the bottom wall 120 so as to provide a container 100 suitable for storing and transporting a composition comprising a peroxide. The width of the first pair of opposing side walls 130, 140 is smaller than the width of the second pair of opposing side walls 150, 160. In addition, Figure 1 shows the smallest rectangular cuboid that fits the container 100, defining six planes which each correspond to the six walls of the container 100.

Figures 2A and 2B represent two schematic perspective views of a container 100. The container 100 comprises a top wall and a bottom wall, and the top wall comprises an opening capped with a cap 113, and is further provided with a handle 114. The container 100 comprises a first pair of opposing side walls 130,140 and a second pair of opposing side walls connected to each other, to the top and bottom walls so as to provide a container 100. Each side wall of the first pair of opposing side walls 130, 140 comprises one inwardly projecting hollow profiled wall portion 131, 141. These inwardly projecting hollow profiled
wall portions 131, 141 are ellipsoidal domes and comprise a major axis 135, 145 that is perpendicular to the plane of the bottom wall 120 of the container 100.

Figures 3A and 3B represent two schematic perspective views of a container 100. The container 100 comprises a top wall and a bottom wall, and the top wall comprises an opening capped with a cap 113, and is further provided with a handle 114. The container 100 comprises a first pair of opposing side walls 130,140 and a second pair of opposing side walls 150, 160 connected to each other, to the top and bottom walls so as to provide a container 100. One side wall 130 of the first pair of opposing side walls 130, 140 comprises one inwardly projecting hollow profiled wall portion 131. The other side wall 140 of the first pair of opposing side walls comprises one outwardly projecting hollow profiled wall portion 142. Each side wall of the second pair of opposing side walls 150, 160 comprises one inwardly projecting hollow profiled wall portion 158, 167 and one outwardly projecting hollow profiled wall portion 157, 168. The hollow profiled wall portions 131, 142, 157, 158, 167, 168 are ellipsoidal domes and comprise a major axis that is perpendicular to the plane of the bottom wall 120 of the container 100. The hollow profiled wall portions can be coupled when stacking multiple containers, thereby providing an improved stacking.

Figures 4A and 4B represent two schematic perspective views of a container 100. The container 100 comprises a top wall and a bottom wall, and the top wall comprises an opening capped with a cap 113, and is further provided with a handle 114. The container 100 comprises a first pair of opposing side walls and a second pair of opposing side walls 150, 160 connected to each other, to the top and bottom walls so as to provide a container 100. Each side wall of the second pair of opposing side walls 150, 160 comprises three inwardly 152, 154, 156;161, 163, 165 and three outwardly 151, 153, 155, 162, 164, 166 projecting spheroidal profiled wall portions, wherein these spheroidal profiled wall portions are arranged in two columns perpendicular to the plane of the bottom wall 120 and three rows parallel to the plane of the bottom wall 120, and wherein within each row and each column inwardly and outwardly projecting spheroidal profiled wall portions are alternated.

The peroxide containers as described herein have an improved strength, specifically when under top-loading compression.

It is to be understood that although preferred embodiments have been discussed for providing embodiments according to the present invention, various
modifications or changes may be made without departing from the scope and spirit of this invention.

Should the disclosure of any patents, patent applications, and publications which are incorporated herein by reference conflict with the description of the present application to the extent that it may render a term unclear, the present description shall take precedence.
C L A I M S

1. A method for storing a composition comprising at least one peroxide, 
said method comprising the step of providing at least one hollow container (100) 
and storing the composition therein, wherein the container (100) is substantially 
rectangular cuboid shaped and comprises a top wall (110) with at least one 
opening (112) configured to dispense the composition in or out of the 
container (100), a bottom wall (120) provided opposite the top wall (110), a first 
pair of opposing side walls (130, 140) and a second pair of opposing side 
walls (150, 160) connecting the top wall (110) with the bottom wall (120). 
wherein each side wall is connected to two other side walls constituting a 
peripheral wall, characterized in that at least one side wall of the container (100) 
comprises at least one structural reinforcement selected from an inwardly 
projecting hollow profiled wall portion, an outwardly projecting hollow profiled 
wall portion, or a combination thereof.

2. A method for storing a composition comprising at least one peroxide, 
said method comprising the step of providing at least one hollow container (100) 
and storing the composition therein, wherein the container (100) is substantially 
rectangular cuboid shaped and comprises a top wall (110) with at least one 
opening (112) configured to dispense the composition in or out of the 
container (100), a bottom wall (120) provided opposite the top wall (110), a first 
pair of opposing side walls (130, 140) and a second pair of opposing side 
walls (150, 160) connecting the top wall (110) with the bottom wall (120). 
wherein each side wall is connected to two other side walls constituting a 
peripheral wall, characterized in said container (100) is pressurized before 
storage.

3. The method according to claim 2, wherein at least one side 
wall (130, 140, 150, 160) of the container (100) comprises at least one structural 
reinforcement selected from an inwardly projecting hollow profiled wall portion, 
an outwardly projecting hollow profiled wall portion, or a combination thereof.

4. The method according to claim 1 or 3, wherein said inwardly or 
outwardly projecting hollow profiled wall portion is selected from the group 
comprising: a spherical dome, a spheroidal dome, and an ellipsoidal dome.
5. The method according to any of claims 1, 3 or 4, wherein said inwardly or outwardly projecting hollow profiled wall portion comprises a major axis (135, 145) that is perpendicular to the plane of the bottom wall (120) of the container (100).

6. The method according to any of claims 1 to 5, wherein the side walls of the first pair of opposing side walls (130, 140) have a smaller width than the side walls of the second pair of opposing side walls (150, 160).

7. The method according to any of claims 1 to 6, wherein each side wall of the first pair of opposing side walls (130, 140) comprises at least one inwardly projecting hollow profiled wall portion (131, 141).

8. The method according to any of claims 1 to 7, wherein each side wall of the second pair of opposing side walls (130, 140) comprises at least one inwardly projecting hollow profiled wall portion (131, 141).

9. The method according to claim any of claims 1 to 8, wherein each side wall of the second pair of opposing side walls (150, 160) comprises at least one inwardly projecting hollow profiled wall portion (158, 167) and at least one outwardly projecting hollow profiled wall portion (157, 168).

10. The method according to any of claims 1 to 8, wherein each side wall of the second pair of opposing side walls (150, 160) comprises at least two inwardly or outwardly projecting hollow profiled wall portions.

11. The method according to any of claims 1 to 10, wherein each side wall of the second pair of opposing side walls (150, 160) comprises at least two inwardly projecting hollow profiled wall portions and at least two outwardly projecting hollow profiled wall portions.

12. The method according to any of claims 1 to 11, wherein each side wall of the second pair of opposing side walls (150, 160) comprises at least three inwardly (152, 154, 156, 161, 163, 165) projecting hollow profiled wall portions and at least three outwardly (151, 153, 155, 162, 164, 166) projecting hollow profiled wall portions, wherein the hollow profiled wall portions are arranged in two columns perpendicular to the plane of the bottom wall (120) and three rows parallel to the plane of the bottom wall (120), and wherein within each row and
each column inwardly and outwardly projecting hollow profiled wall portions are alternated.

13. The method according to any of claims 1, 3 to 12, wherein at least one inwardly projecting hollow profiled wall portion of a side wall is opposite an outwardly projecting hollow profiled wall portion of the opposite side wall.

14. The method according to claim 13, wherein all inwardly projecting hollow profiled wall portions of a side wall are opposite outwardly projecting hollow profiled wall portions of the opposite side wall and wherein all outwardly projecting hollow profiled wall portions of said side wall are opposite inwardly projecting hollow profiled wall portions of said opposite side wall.

15. The method according to any of claims 1, 3 to 14, comprising the step of pressurizing the container (100) before storage.
**INTERNATIONAL SEARCH REPORT**

**International application No**

PCT/EP2012/058210

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### A. CLASSIFICATION OF SUBJECT MATTER

INV. B65D21/02 B65D81/20

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

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### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal

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### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>AU 2007 201 762 Al (CASH HOLDINGS PTY LTD) 8 November 2007 (2007-11-08) page 3, paragraph 1</td>
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Further documents are listed in the continuation of Box C.

See patent family annex.

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* Special categories of cited documents :

- **A** document defining the general state of the art which is not considered to be of particular relevance
- **E** earlier application or patent but published on or after the international filing date
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- **T** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

- **X** document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

- **Y** document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

- **Z** document member of the same patent family

Date of the actual completion of the international search: 3 August 2012

Date of mailing of the international search report: 16/08/2012

Name and mailing address of the ISA:

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Form PCT/ISA/210 (second sheet) (April 2005)
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