A storage container for liquids has a blow-molded plastic inner container, which has four sidewalls, a bottom, and a convex top with various connecting sockets. A blow-molded plastic outer container is formed by four sidewalls, a bottom, and a removable, convex plastic cover with corresponding through-holes for the connections of the inner container and serves to make the inner container leakproof. An outer cage consists of metal grating bars. Finally, a pallet-like support base is made of metal for standing and moving the storage container by forklift or similar handling equipment.
STORAGE CONTAINER FOR LIQUIDS AND METHOD OF PRODUCING THE OUTER CONTAINER OF THE STORAGE CONTAINER

BACKGROUND OF THE INVENTION

[0001] The invention concerns a storage container for liquids, especially inflammable liquids, such as heating oil, waste oil, lubricating oil, and diesel fuel. Such a container has a plastic inner container in the shape of a cube or a three dimensional rectangle, which can be filled with the liquid and has four sidewalls, a bottom, and a top. The top has a filler connection, a drain connection, a vent connection, and a connection for inserting a level indicator. The container further has an outer container that holds the inner container for leakproofing the inner container, and a pallet-like support base for standing and moving the storage container by forklift or similar handling equipment.

[0002] The heating oil storage containers of this type that are described in DE 100 65 077 C1 are equipped with an outer container for making the inner container leakproof. The outer container is welded together from a surrounding wall plate and two base plates. The production of an outer container of this type from plates that are welded together is relatively expensive.

SUMMARY OF THE INVENTION

[0003] The object of the present invention is to refine the design of the outer container of the storage container of the general type described above to reduce the expense of manufacturing the storage container.

[0004] Pursuant to this object, and others which will become apparent hereafter, one aspect of the present invention resides in a storage container for liquid, having a plastic inner container which is fillable with the liquid and has four sidewalls, a bottom, and a top that has a filler connection, a drain connection, a vent connection, and a connection for inserting a level indicator. A blow-molded plastic outer container holds the inner container for leakproofness of the inner container. The outer container has four sidewalls, a bottom and a removable cover, which has corresponding through-holes for the filler connection, the drain connection, the vent connection, and the connection for the level indicator of the inner container. A metal, pallet-like support base is also provided. The cover has a cover edge that is drawn down, encloses an upper opening edge of the outer container, and has clamping elements formed on it for fastening the cover on the opening edge of the outer container, the opening edge being provided with corresponding holding devices. Also, an outer cage is provided that consists of vertical and horizontal grating bars made of metal and is mounted on the metal support base.

[0005] In another embodiment, a sidewall of the inner container has a vertical groove that forms a channel between the inner and outer containers for holding one of a leakage probe and a suction hose for leakage liquid.

[0006] In still a further embodiment the cover of the outer container is upwardly convex and has a peripheral, flat marginal strip, on which a base frame of the support base of a stacked storage container is set.

[0007] Yet another embodiment provides that the cover has a middle section with a flat collecting depression for leakage liquid dripping from connection screw couplings and fittings.

[0008] The storage container, in another embodiment, has at least one locking hoop, which consists of a flat bar material, fit on the convex cover of the outer container, and is fastened to two opposite frame parts of an upper frame of the outer cage.

[0009] The plastic design of the outer container of the storage container of the invention allows simple and inexpensive production of the outer container with a removable plastic cover.

[0010] The various features of novelty, which characterize the invention, are pointed out with particularity in the claims annexed to and forming part of the disclosure. For a better understanding of the invention, its operating advantages, and specific objects attained by its use, reference should be had to the drawing and descriptive matter in which there are illustrated and described preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWING

[0011] In the drawing:

[0012] FIG. 1 shows a perspective view of a storage container pursuant to the present invention;

[0013] FIG. 2 shows an exploded view of the storage container of FIG. 1;

[0014] FIG. 3 shows an enlarged longitudinal sectional view of a section of the top of the inner container and of the upper peripheral region and cover of the outer container as well as the lower bottom regions of the inner container and of the outer container with the support base of the storage container; and

[0015] FIG. 4 shows an enlarged longitudinal sectional view of a portion of the blow-molded body of the outer container.

DETAILED DESCRIPTION OF THE INVENTION

[0016] The principal components of the storage container 1 for liquids, especially inflammable liquids, such as heating oil, waste oil, lubricating oil, and diesel fuel, include a three dimensional rectangular, blow-molded plastic inner container 2, which has four sidewalls 3-6, a bottom 7, and a convex top 8 with a filler connection 9, a drain connection 10, a vent connection 11, and a connection 12 for inserting a level indicator. The container further includes a blow-molded plastic outer container 13, which holds the inner container 2 and makes it leakproof and which is formed by four sidewalls 14-17, a bottom 18, and a removable, convex plastic cover 19 with corresponding through-holes 20 for the filler connection 9, the drain connection 10, the vent connection 11, and the connection 12 for the level indicator of the inner container 2. An outer cage 21 is provided that consists of vertical and horizontal grating bars 22, 23 made of metal. Finally, a pallet-like support base 24 is provided that is made of metal for standing and moving the storage container 1 by forklift or similar handling equipment.

[0017] The support base 24 of the storage container 1 is equipped with a base plate 25, on which the inner container 2 and the outer container 13 stand. The base plate 25 of the support base 24 is fastened to the lower frame 26 of the cage 21 on corner and middle feet 27, 28, which are installed on a base frame 29.
The convex rectangular cover 19 of the outer container 13, which conforms to the convex top 8 of the inner container 2, has a cover edge 31 that is drawn down and encloses the upper opening edge 30 of the outer container with hook-like clamping elements 33 formed on the corner regions 32 for fastening the cover 19 on the opening edge 30 of the outer container corner regions 32. The opening edge 30 has corresponding holding devices 35 in its corner regions 34. The cover 19 of the outer container 13 is provided with a peripheral, flat marginal strip 36, on which the base frame 29 of the support base 24 of a stacked storage container 1 is set. A flat collecting depression 38 for leakage liquid dripping from connection screw cupplings and fittings is formed in the middle section 37 of the cover 19.

The cover 19 is secured on the outer container 13 by two locking hoops 39, which consist of a flat bar material, fit on the cover, and are screwed onto two opposite frame parts 41, 42 of the upper frame 40 of the cage 21. In addition, the cover 19 is secured by the screw caps 43 screwed onto the connections 9-12 of the inner container 2.

Slide edges 44 are formed on the cover 19 along the locking hoops 39. The gripping arms of a handling device slide on these slide edges 44 during the lifting of a stacked storage container 1.

A vertical groove 45 is formed in the front sidewall 3 of the inner container 2, which passes over into an arch 46 in the bottom 7 of the inner container. The vertical groove 45 and the arch 46 of the inner container 2 form a channel 47 between the inner container 2 and the outer container 13 for holding a leakage probe 48 or a hose for sucking out leakage liquid. To retrofit the storage container 1 with a leakage probe 48, a small centering 49 is located in the marginal strip 36 of the cover 19 of the outer container 13 above the channel 47 for providing an insertion hole 50 for the leakage probe 48 or a suction hose.

The body 51 of the outer container with the four sidewalls 14-17, the bottom 18 and the convex top 52 with the displaced, flat, horizontal, or slightly outwardly sloped marginal strip 36 is blow-molded from an extruded plastic parison, such that the marginal strip 36 turns into four upper, inwardly displaced marginal sections 55 of the four sidewalls 14-17 of the body 51 of the outer container 13 via the frame-like edge 31 with four marginal sections 53 running parallel to the sidewalls 14-17 of the body 51 of the outer container and four inwardly curved, narrow connecting sections 54, and the frame-like edge 31 of the top 52 projects outwardly a small distance a beyond the upper marginal sections 55 of the four sidewalls 14-17 of the body 51 of the outer container 13 (FIG. 4). After the blow-molded body 51 of the outer container 13 has cooled, the top 52, which forms the cover 19 of the outer container 13, is separated by cutting out the connecting sections 54 from the closed body 51 of the outer container 13.

The invention is not limited by the embodiments described above which are presented as examples only but can be modified in various ways within the scope of the protection defined by the appended patent claims.

I claim:

1. A storage container for liquid, comprising: a plastic inner container which is fillable with the liquid and has four sidewalls, a bottom, and a top that has a filler connection, a drain connection, a vent connection, and a connection for inserting a level indicator; a blow-formed plastic outer container that holds the inner container for leakproofness of the inner container, the outer container having four side-walls, a bottom and a removable cover, which has corresponding through-holes for the filler connection, the drain connection, the vent connection, and the connection for the level indicator of the inner container; a metal, pallet-like support base, the cover having a cover edge that is drawn down, encloses an upper opening edge of the outer container, and has clamping elements formed on it for fastening the cover on the opening edge of the outer container, the opening edge being provided with corresponding holding devices; and an outer cage that consists of vertical and horizontal grating bars made of metal and is mounted on the metal support base.

2. The storage container in accordance with claim 1, wherein a sidewall of the inner container has a vertical groove that forms a channel between the inner and outer containers for holding one of a leakage probe and a suction hose for leakage liquid.

3. The storage container in accordance with claim 1, wherein the cover of the outer container is upwardly convex and has a peripheral, flat marginal strip, on which a base frame of the support base of a stacked storage container is set.

4. The storage container in accordance with claim 3, wherein the cover has a middle section with a flat collecting depression for leakage liquid dripping from connection screw cupplings and fittings.

5. The storage container in accordance with claim 4, and further comprising at least one locking hoop, which consists of a flat bar material, fit on the convex cover of the outer container, and is fastened to two opposite frame parts of an upper frame of the outer cage.

6. The storage container in accordance with claim 5, wherein the locking hoop is fastened by screwing.

7. The storage container in accordance with claim 5, wherein slide edges are formed on the cover of the outer container and run along the locking hoops, gripping arms of a handling device sliding on the slide edges during lifting of a stacked storage container.

8. The storage container in accordance with claim 1, wherein the plastic inner container has one of a cubic shape and a three-dimensional rectangular shape.

9. A method of producing an outer container for a storage container for liquid which has a plastic inner container which is fillable with the liquid and has four sidewalls, a bottom, and a top that has a filler connection, a drain connection, a vent connection, and a connection for inserting a level indicator, the outer container, a metal, pallet-like support base, and an outer cage that consists of vertical and horizontal grating bars made of metal and is mounted on the metal support base, the method comprising the steps of: blow molding of a body of the outer container with four sidewalls, a bottom, and a convex top with a displaced, flat, horizontal, or slightly outwardly sloped marginal strip from an extruded plastic parison, such that the marginal strip turns into four upper, inwardly displaced marginal sections of the four sidewalls of the body of the outer container via a frame-like edge with four marginal sections running parallel to the sidewalls of the body of the outer container and four inwardly curved, narrow connecting sections, such that the frame-like edge of the top projects outwardly a small
distance beyond the upper marginal sections of the four sidewalls of the body of the outer container; and, after the blow-molded body of the outer container has cooled, separating the top, which forms the cover of the outer container by cutting out the connecting sections from the closed, blow-molded body of the outer container.

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