

TRANSPORT AND STORAGE CONTAINER FOR LIQUIDS

5 The invention relates to a transport and storage container for liquids having an inner container made of plastic, an outer jacket made of metal and realized preferably as a lattice structure, and a pallet-type base frame which is realized for being handled by means of forklifts or similar modes of transportation and has a support base made of sheet
10 metal for supporting the inner container provided with at least one filler neck on its upper side, an intermediary container made of sheet metal and accommodating the inner container on all sides being realized between the inner container and the outer jacket, said intermediary container having a jacket case, a container lid connected to the jacket
15 case and a container bottom realized by the support bottom of the base frame and connected to the jacket case in a liquid-tight manner.

Known transport and storage containers of the type mentioned at the beginning are mainly used for transporting liquids, enabling also storing the liquids in the same container after filling the liquids and transporting
20 the liquids in the container within the scope of corresponding provisions in the sense of fire protection regulations.

To prevent highly flammable liquids held in the container from being able to leak into the container environment should the plastic inner container fail due to thermal overload in order to comply with
25 corresponding fire protection regulations, it is known from WO 2017/108288 A1 to connect the jacket case surrounding the inner container in a liquid-tight manner to the container bottom realized by the support bottom of the base frame in order to thus realize a liquid-tight tub which prevents the inflammable liquid from flowing out of the inner
30 container into the surrounding environment of the transport and storage container should the plastic inner container fail due to thermal overload.

In order to allow both a filling and an emptying of the inner container accommodated in the jacket case, in the case of the transport and storage container known from WO 2017/108288 A1, the inner container may have both a filler opening and a tapping opening on its upper side such
5 that both a filling with and a tapping of liquids can be carried out from the top. However, disposing the tapping opening on the upper side of the inner container also requires the provision of special tapping elements for tapping liquids from the inner container, said tapping elements extending inside the inner container from the upper side to the bottom of
10 the inner container and their operation requiring special pump devices.

Conventional tapping elements which are used in an inner container provided with a bottom outlet and which are characterized by a particularly simple design and enable a pure gravimetric emptying of the container without using pumps are therefore not useable in the known
15 fireproof transport and storage containers. This turns out to be especially disadvantageous if highly viscous liquids are held in the inner container which require a particularly high pump performance for being tapped through a tapping opening provided on the upper side of the inner container.

20 The object of the invention at hand is therefore to propose a transport and storage container which is fireproof and/or leakproof in the event of a fire and which allows the use of a conventional tapping fitting, which is provided for being connected to a bottom outlet of the inner container, in order to tap the liquid held in the inner container.

25 To attain this object, the transport and storage container according to the invention has the features of claim 1.

According to the invention, the jacket case has an access opening, which is closed in a liquid-tight manner by means of a container lid made of metal, where it overlaps with a bottom outlet realized on an inner
30 container.

Through the access opening, accessing an outlet fitting disposed on the bottom outlet of the inner container is possible in such a manner that such inner containers having a bottom outlet for the connection of an outlet fitting and, thus, allowing a gravimetrical emptying of the inner container disposed in the jacket case are also usable in combination with the jacket case surrounding the inner container without thereby impairing the suitability of the transport and storage container for the safe storage of inflammable liquids in accordance with fire protection regulations in force at the storage location. Rather, in addition to the known advantage of preventing the liquid held in the inner container from leaking into the surrounding environment of the transport and storage container due to a container failure of the inner container, the transport and storage container according to the invention provides the further advantage of also enabling a gravimetric liquid tapping in the case of such a fireproof transport and storage container.

Preferably, for the realization of an access opening closeable in a liquid-tight manner by means of a front lid, the front lid may be connected to the jacket case by means of a clamping ring closure.

The sealing between the front lid and the opening edge of the access opening which is essentially achieved by the surface pressure generated by the clamping ring can be further increased by additional sealing elements in order to increase in particular the creep strength of the sealing between the front lid and the access opening under extreme temperature loads. Therefore, it can be advantageous to provide the sealing area additionally with a suitable thermal insulation on the outside. For example, this can be a coating forming an insulation layer, such as an intumescent lacquer, a protection cap having a thermal insulation, a textile-based thermal insulation or a combination of the aforementioned options.

In order to achieve a reliable sealing effect even with relatively low clamping forces, the access opening can have a flanged rim for realizing

the clamping ring closure, a complementary flanged rim of the front lid engaging said flanged rim.

Moreover, it is thereby possible that possible shape tolerances or dimensional tolerances between the contact surfaces realized on the front
5 lid and the opening edge of the access opening can be compensated for by corresponding deformations of the flanged rims.

It is particularly advantageous if the front lid covers an outlet fitting disposed on the outlet opening such that the transport and storage container already has the outlet fitting in its fireproof configuration, that
10 is in its configuration in which it is provided with the container lid, and that the liquid can be tapped from the inner container by means of the conventional outlet fitting immediately after the container lid has been removed.

In order to enable a particularly easy removing of the front lid from the
15 access opening provided in the jacket case, a removal opening for removing the front lid from the access opening is realized opposite the front lid in the outer jacket of the transport and storage container.

If the removal opening is defined by the distance of adjacent continuously realized horizontal bars or vertical bars of the outer jacket
20 realized as a lattice structure, the removal opening is already predetermined by the lattice structure such that special measures on the lattice structure are superfluous.

In the event that the regular lattice structure of the outer jacket does not yet realize a removal opening which allows a removal of the front lid
25 from the transport and storage container, it is advantageous if the lattice structure of the outer jacket has a vacancy to realize the removal opening in such a manner that a horizontal bar or a vertical bar of the lattice structure has a bar gap where it overlaps with the front lid, wherein the

front lid can be removed from the access opening realized in the jacket case through said bar gap.

In order to ensure a minimum accumulation height within the transport and storage container independently of the arrangement of the front lid even when the access opening in the jacket case is opened, it is advantageous if the front lid is disposed above a bond realized materially between the jacket case and the support bottom.

Below, a preferred embodiment of the invention is explained in more detail with reference to the drawings.

10 In the figures:

Fig. 1 shows an isometric illustration of the transport and storage container having a front lid disposed on a front side in the area of a bottom outlet;

15 **Fig. 2** shows a front view of the transport and storage container illustrated in **Fig. 1** having the access opening opened after removal of the front lid;

20 **Fig. 3** shows a partial sectional illustration of the transport and storage container illustrated in **Fig. 1** along section plane III illustrated in **Fig. 1** with an illustration of a tapping fitting connected to the bottom outlet of the inner container of the transport and storage container;

Fig. 4 shows an enlarged partial illustration of the sectional illustration shown in **Fig. 3**;

25 **Fig. 5** shows an enlarged detailed illustration of a clamping ring closure illustrated in **Fig. 4**.

Fig. 1 shows a transport and storage container 10 having a pallet-type base frame 11 having an outer jacket 12 realized as a lattice structure in

the case at hand, said outer jacket 12 being composed of horizontal bars 13 and vertical bars 14 and being connected to a support bottom 15 of base frame 11 via continuously circumferential lower horizontal bar 13, said support bottom 15 being in particular illustrated in **Fig. 3**. A jacket case 16 is also connected to support bottom 15, said jacket case 16 being disposed inside outer jacket 12 in such a manner that jacket case 16 is located between outer jacket 12 and an inner container 17 made of plastic and disposed on support bottom 15, jacket case 16, which is made of metal, being connected in a liquid-tight manner at its lower edge to support bottom 15, which is also made of sheet metal, and realizing together with support bottom 15 a fireproof tub in which inner container 17 is accommodated such that, in case of a container failure, in particular due to a thermal overload of the plastic material of inner container 17, a liquid held in inner container 17 can indeed leak from inner container 17, but cannot flow into the surrounding environment of transport and storage container 10. In the case at hand, a material bond realized as a welded joint is provided for the realization of the liquid-tight connection between jacket case 16 and support bottom 15.

As can be seen in a combination of **Figs. 1 to 3**, jacket case 16 has an access opening 20, which is provided with a front lid 19, on a front side in the area of a bottom outlet 18 designed on inner container 17. Access opening 20 is located in an arrangement covering bottom outlet 18 and/or a tapping fitting 21 connected to bottom outlet 18 such that, as **Figs. 2 and 3** show, tapping fitting 21 connected to bottom outlet 18 of inner container 17 can be accessed through access opening 20 opened after front lid 19 has been removed such that tapping fitting 21 can be transferred to an open or closed position in order to be able to tap liquid from inner container 17 in a defined manner by actuating tapping fitting 21 by means of a valve handle 22 realized on tapping fitting 21.

As becomes clear in particular from a combination of **Figs. 3 to 5**, in the case of the illustrated exemplary embodiment, front lid 19 is connected

to jacket case 16 by means of a clamping ring closure 23 in the position in which it seals access opening 20. For this purpose, an opening edge of access opening 20 is realized as a flanged rim 24, a complementary flanged rim 25 of front lid 19 engaging said flanged rim 24. In this
5 positioning of front lid 19 on access opening 20, which is in particular illustrated in **Fig. 5**, a channel-shaped clamping ring 26 engages both flanged rim 25 of front lid 19 and flanged rim 24 of access opening 20 such that, after having turned a clamping lever 27 connecting the ends of clamping ring 26 to each other, a sufficiently large radial pressing force
10 is applied onto flanged rim 25 of front lid 19 in order to achieve a sealing contact of flanged rim 25 with flanged rim 24 of access opening 20.

Moreover, in particular after the clamping ring closure has been repeatedly used, it can turn out to be necessary to provide an additional
15 sealing (not illustrated in more detail in the case at hand) between overlapping flanged rims 24 and 25.

As **Figs. 1 to 3** show, a vacancy is realized in the lattice structure of outer jacket 12 in the area of access opening 20 in such a manner that a horizontal bar 13 which, in the case of a continuous configuration,
20 overlaps access opening 20 and/or front lid 19 disposed on access opening 20 has a bar gap 28 such that a removal opening 29 is realized in the lattice structure, said removal opening 29 being sufficiently large to allow front lid 19 to be removed from access opening 20 realized in jacket case 16 without being obstructed by the lattice structure of outer
25 jacket 12 and, thus, to enable the access to tapping fitting 21.

Claims

1. A transport and storage container (10) for liquids having an inner
container (17) made of plastic, an outer jacket (12) made of metal
5 and realized preferably as a lattice structure, and a pallet-type base
frame (11) which is realized for being handled by means of forklifts
or similar modes of transportation and has a support base (15) made
of sheet metal for supporting the inner container (17) provided with
at least one filler neck on its upper side,
10 an intermediary container made of sheet metal and accommodating
the inner container (17) on all sides being realized between the inner
container (17) and the outer jacket (12), said intermediary container
having a jacket case (16), a container lid connected to the jacket case
(16) and a container bottom realized by the support bottom (15) of
15 the base frame (11) and connected to the jacket case (16) in a liquid-
tight manner,
characterized in that
the jacket case (16) has an access opening (20), which is closed in a
liquid-tight manner by means of a front lid (19) made of metal, where
20 it overlaps with an outlet opening realized as a bottom outlet (18) on
the inner container (17).
2. The transport and storage container according to claim 1,
characterized in that
the front lid (19) is connected to the jacket case (16) by means of a
25 clamping ring closure (23).
3. The transport and storage container according to claim 2,
characterized in that
the access opening (20) has a flanged rim (24) for realizing the

clamping ring closure (23), a complementary flanged rim (25) of the front lid (19) engaging said flanged rim (24).

4. The transport and storage container according to any one of the preceding claims,
5 characterized in that
the front lid (19) covers an outlet fitting (21) disposed on the outlet opening.
5. The transport and storage container according to any one of the preceding claims,
10 characterized in that
a removal opening (29) for removing the front lid (19) from the access opening (20) is realized opposite the front lid (19) in the outer jacket (12) of the transport and storage container.
6. The transport and storage container according to any one of the preceding claims,
15 characterized in that
the removal opening (29) is defined by the distance of adjacent continuously realized horizontal bars (13) or vertical bars (14) of the outer jacket (12) realized as a lattice structure.
- 20 7. The transport and storage container according to any one of claims 1 to 5,
characterized in that
the lattice structure of the outer jacket (12) has a vacancy to realize the removal opening (29) in such a manner that a horizontal bar (13)
25 or a vertical bar (14) of the lattice structure has a bar gap (28) where it overlaps with the front lid (19).

8. The transport and storage container according to any one of the preceding claims,
characterized in that
the front lid (19) is disposed above a material bond realized between
5 the jacket case (16) and the support bottom (15).
9. The transport and storage container according to claim 8,
characterized in that
the material bond is realized as a welded joint.