

TRAY FOR BAG FOR MEDICAL USE, TUBES AND ACCESSORIES,
INTENDED FOR STERILISATION

5 **Field of the invention**

The present invention relates to the field of packaging hollow and flexible systems sterilized by steam.

10

The present invention relates more particularly to a tray for a bag for medical use, tubings and accessories, intended to be sterilized by steam.

15

State of the art

The following needs exist in the state of the art:

- At the packing/packaging step, both:

20 o Allowing ergonomic and repeatable positioning of the system (bag, tubings and accessories) in a peelable sterilization pouch.

25 o Facilitating the stacking of several packed systems, while limiting the transmission of inter-system mechanical stresses.

- At the sterilization step, both:

o Allowing internal sterilization of the system.

30 o Avoiding the transmission of mechanical stresses between the bag and the tubings and accessories, when the bag undergoes the possible inflations during the autoclave cycle (due to pressure variations in the autoclave).

35 The main issue is the preservation of the integrity of the system during autoclaving. It is all the more difficult to be preserved when the system contains:

- A flexible bag potentially subject to inflation/deflation cycles,

- PVC tubings, the mechanical strength of which decreases sharply at the autoclave temperature (121 °C),
- Numerous injected plastic accessories, some of which can be relatively bulky and blunt.

5

There is no solution in the state of the art that allows preserving this integrity, in the case of "bags, tubings and accessories" systems as described above. The systems existing in the state of the art are directly
10 packaged "in bulk" in a peelable autoclave pouch, without special precautions.

Bags for medical use in autoclavable packages composed of a layer made of transparent plastic film and
15 of a paper layer permeable to water vapor are in particular known in the state of the art. Among these bags, some have tubes made of PVC material, but generally no bulky or blunt accessories.

20 Kits in packages of the type blister sterilized by irradiation or by ethylene oxide are also known in the state of the art. The lower part of these packages generally consists of a thermoformed polymer plate, the lid being flexible and peelable. Among these kits, some
25 have tubes made of PVC material of different kinds and many injected rigid accessories, some of which are bulky and/or blunt.

Disclosure of the invention

30

The present invention intends to overcome the drawbacks of the prior art by proposing a shaped tray, including a plurality of housings, able to receive a bag for medical use, tubings and accessories, which are
35 intended to be sterilized by steam.

To this end, the present invention relates, in its broadest sense, a shaped tray, including a plurality of housings, the tray and each of said housings being able to receive a bag for medical use, at least one tubing
5 and at least one accessory, said bag for medical use, said at least one tubing and said at least one accessory being linked together, wherein said tray is able to be wrapped in a package for autoclaving.

10 Thus, the tray according to the present invention allows:

- providing a lower horizontal bearing plane to lie flat;
- 15 - embedding the tubings and accessories in depressed shapes, preserving them from any contact therebetween and with the bag;
- providing a median horizontal bearing plane for the bag, allowing it to inflate slightly without stresses
20 on the tubes or accessories;
- providing an upper horizontal bearing plane to stack several packed systems (for example stacked "head to tail");
- serving as a template, in particular to check, by
25 visual inspection, that the system is correctly assembled.

According to one embodiment, said tray is made of polycarbonate.

30

According to one embodiment, said tray includes cutouts in its bottom allowing possible condensates to flow by gravity.

35 According to one embodiment, said peelable package includes an upper film made of transparent plastic material, and a lower film made of porous material.

Thus, the upper film allows visualization of the system in position in the tray, and the lower film allows circulation of steam and gravity discharge of the possible condensates.

Advantageously, at least one of said housings is configured to allow displacement of said at least one tubing in the axis of said at least one tubing.

10

Preferably, at least one of said housings is configured to prevent displacement of said at least one tubing in the axis normal to the plane of said tray.

According to one variant, at least one of said housings includes an abutment blocking said at least one tubing in one position, along an axis normal to the plane of said tray.

According to one embodiment, at least one of said housings is configured to block said at least one accessory in a predetermined position.

In one embodiment, said at least one tubing is free in displacement.

According to one embodiment, said tray includes planes, such as:

- a housing able to receive said bag for medical use is located in a first plane;
 - two other housings able to receive said at least one tubing and said at least one accessory are located respectively in a second plane and in a third plane;
- said first plane being distinct from said second and third planes and parallel to said second and third planes.

This allows increasing the compactness of the device while preserving the integrity of the kit.

5 According to another embodiment, said bag for medical use, said at least one tubing and said at least one accessory are located in the same plane.

Advantageously, said displacement of said at least one tubing in the axis of said at least one tubing has a length comprised between 5% and 25% of the length of said at least one tubing.

Preferably, said displacement of said at least one tubing in the axis of said at least one tubing has a length comprised between 10% and 20% of the length of said at least one tubing.

According to one variant, said tray is thermoformed.

According to another variant, said tray is produced by a plastic injection method.

25 According to another variant, said tray is obtained by stamping.

According to one embodiment, said tray is able to be stacked on another tray of the same type, while preserving the integrity of said bag for medical use.

According to one embodiment, at least one housing, able to receive said bag for medical use, is configured to allow the inflation of said bag for medical use.

35 According to a particular implementation, said package is peelable.

Brief description of the drawings

5 The invention will be better understood with the description, given below for purely explanatory purposes, of an embodiment of the invention, with reference to the Figures in which:

- Figures 1, 2 and 3 illustrate the tray according to the present invention, in one embodiment; and
- 10 • Figure 4 represents a kit (bag for medical use, tubings and accessories) used in the context of the present invention.

Detailed description of embodiments of the 15 **invention**

The present invention relates to a shaped tray 10. The tray 10 according to the present invention includes a plurality of housings 11, 12, 13, the tray 10 and each
20 of said housings 11, 12, 13 being able to receive a bag 20 for medical use, at least one tubing 21 and at least one accessory 22, said bag 20 for medical use, said at least one tubing 21 and said at least one accessory 22 being linked together. In addition, said tray 10 is able
25 to be wrapped in a package 30 for autoclaving.

Figures 1, 2 and 3 illustrate the tray according to the present invention, in one embodiment.

30 Figure 1 shows the tray 10 according to the present invention, which includes a plurality of housings 11, 12, 13. Figure 1 also shows a bag 20 for medical use as well as tubings 21 and accessories 22, these different elements being linked together. Finally, Figure 1 shows
35 a package 30 which wraps the tray 10 according to the present invention.

The bag and the tubings are relatively free to move on the horizontal planes, in order to allow them to deform without resistance, in particular in the context of the inevitable shrinkages with some polymers at the mentioned temperatures.

Figures 2 and 3 also show the tray 10 according to present invention, which includes a plurality of housings 11, 12, 13.

10

Figure 4 represents a kit (bag for medical use, tubings and accessories) used in the context of the present invention. The kit illustrated in Figure 4 includes a bag 20 for medical use as well as tubings 21 and accessories 22, these different elements being linked together.

15

In one embodiment, the autoclavable package 30 is used such that the upper film is made of transparent plastic material, thus allowing visualization of the system in position in the tray, and such that the lower film is made of porous material, paper type, allowing circulation of steam and gravity discharge of possible condensates.

25

In one embodiment, the tray 10 according to the present invention is made of polycarbonate. In this embodiment, the present invention is implemented by thermoforming of a polycarbonate plate, which is a material that can withstand autoclaving at 121 °C.

30

In one embodiment, the tray 10 according to the present invention includes cutouts in its bottom allowing possible condensates to flow by gravity.

35

In one embodiment, at least one of said housings 11, 12, 13 is configured to allow displacement of said

at least one tubing 21 in the axis of said at least one tubing 21.

5 In one embodiment, at least one of said housings 11, 12, 13 is configured to prevent displacement of said at least one tubing 21 in the axis normal to the plane of said tray 10.

10 In one embodiment, at least one of said housings 11, 12, 13 includes an abutment blocking said at least one tubing 21 in one position, along an axis normal to the plane of said tray 10.

15 In one embodiment, at least one of said housings 11, 12, 13 is configured to block said at least one accessory 22 in a predetermined position.

20 In one embodiment, said at least one tubing 21 is free in displacement.

In one embodiment, the tray 10 according to the present invention includes planes P1, P2, P3, such as:

- a housing 11 able to receive said bag 20 for medical use is located in a first plane P1;
- 25 - two other housings 11, 12 able to receive said at least one tubing 21 and said at least one accessory 22 are located respectively in a second plane P2 and in a third plane P3;

and in that said first plane P1 is distinct from

30 said second and third planes P2, P3 and parallel to said second and third planes P2, P3.

This allows increasing the compactness of the device, while preserving the integrity of the kit.

35

In another embodiment, said bag 20 for medical use, said at least one tubing 21 and said at least one accessory 22 are located in the same plane.

5 In one embodiment, said displacement of said at least one tubing 21 in the axis of said at least one tubing 21 has a length comprised between 5% and 25% of the length of said at least one tubing 21.

10 In one embodiment, said displacement of said at least one tubing 21 in the axis of said at least one tubing 21 has a length comprised between 10% and 20% of the length of said at least one tubing 21.

15 In one embodiment, the tray 10 according to the present invention is thermoformed.

 In another embodiment, the tray 10 according to the present invention is made by a plastic injection method.
20

 In another embodiment, the tray 10 according to the present invention is obtained by stamping.

 In one embodiment, the tray 10 according to the present invention is able to be stacked on another tray of the same type, while preserving the integrity of said bag 20 for medical use.
25

 In one embodiment, at least one housing 11, 12, 13, able to receive said bag 20 for medical use, is configured to allow inflation of said bag 20 for medical use.
30

 In one embodiment, said package 30 is peelable.
35

 The tray 10 according to the present invention finds applications in the cases of steam-sterilization of

hollow systems composed of fragile and deformable parts,
and of rigid parts likely to mark or damage them.

5 The invention is described in the foregoing by way
of example. It is understood that those skilled in the
art is able to achieve different variants of the
invention without however departing from the context of
the patent.

CLAIMS

1. A shaped tray (10), characterized in that it includes a plurality of housings (11, 12, 13), the tray
5 (10) and each of said housings (11, 12, 13) being able to receive a bag (20) for medical use, at least one tubing (21) and at least one accessory (22), said bag (20) for medical use, said at least one tubing (21) and said at least one accessory (22) being linked together,
10 and in that said tray (10) is able to be wrapped in a package (30) for autoclaving, and in that it includes cutouts in its bottom allowing possible condensates to flow by gravity.

15 2. The tray (10) according to claim 1, characterized in that it is made of polycarbonate.

3. The tray (10) according to one of the preceding claims, characterized in that at least one of said
20 housings (11, 12, 13) is configured to allow displacement of said at least one tubing (21) in the axis of said at least one tubing (21).

4. The tray (10) according to any of the preceding
25 claims, characterized in that at least one of said housings (11, 12, 13) is configured to prevent displacement of said at least one tubing (21) in the axis normal to the plane of said tray (10).

30 5. The tray (10) according to claim 3, characterized in that at least one of said housings (11, 12, 13) includes an abutment blocking said at least one tubing (21) in one position, along an axis normal to the plane of said tray (10).

6. The tray (10) according to one of claims 1 to 2, characterized in that at least one of said housings (11, 12, 13) is configured to block said at least one accessory (22) in a predetermined position.

5

7. The tray (10) according to any of the preceding claims, characterized in that it includes planes (P1, P2, P3), such as:

- a housing (11) able to receive said bag (20) for medical use is located in a first plane (P1);
- two other housings (11, 12) able to receive said at least one tubing (21) and said at least one accessory (22) are located respectively in a second plane (P2) and in a third plane (P3);

15 and in that said first plane (P1) is distinct from said second and third planes (P2, P3) and parallel to said second and third planes (P2, P3).

8. The tray (10) according to any of the preceding claims, characterized in that said bag (20) for medical use, said at least one tubing (21) and said at least one accessory (22) are located in the same plane.

9. The tray (10) according to claim 3, characterized in that said displacement of said at least one tubing (21) in the axis of said at least one tubing (21) has a length comprised between 5% and 25% of the length of said at least one tubing (21).

10. The tray (10) according to claim 3, characterized in that said displacement of said at least one tubing (21) in the axis of said at least one tubing (21) has a length comprised between 10% and 20% of the length of said at least one tubing (21).

11. The tray (10) according to claim 1, characterized in that it is thermoformed.

12. The tray (10) according to claim 1,
5 characterized in that it is produced by a plastic injection method.

13. The tray (10) according to claim 1,
10 characterized in that it is obtained by stamping.

14. An assembly including a tray (10) according to any of claims 1 to 13, a bag (20) for medical use, at least one tubing (21), at least one accessory (22) and a package (30) wrapping said tray (10), characterized in
15 that said package (30) includes an upper film made of transparent plastic material, and a lower film made of porous material.

15. The assembly including a tray (10) according to
20 any of claims 1 to 13, a bag (20) for medical use, at least one tubing (21), at least one accessory (22) and a package (30) wrapping said tray (10), characterized in that said at least one tubing (21) is free in displacement.

25
16. The assembly including a tray (10) according to any of claims 1 to 13, a bag (20) for medical use, at least one tubing (21), at least one accessory (22) and a package (30) wrapping said tray (10), characterized in
30 that said package (30) is peelable.