DOMESTIC REFRIGERATION DEVICE AND DOOR TRAY FOR A REFRIGERATION DEVICE

A door tray for a refrigeration device includes a decorative strip having a profile that is U-shaped in cross section. An open-topped container has an edge onto which the decorative strip is fitted with the U-shaped profile thereof. Provided at least partially on an inner surface is a material having relatively high static friction. The material is in contact with the container and fixes the decorative strip to the container merely due to the static friction of said material.
DOMESTIC REFRIGERATION DEVICE AND DOOR TRAY FOR A REFRIGERATION DEVICE

[0001] The invention relates to a domestic refrigeration device and a door tray for a refrigeration device.

[0002] Door trays are containers arranged on the internal side of refrigeration device doors, which are frequently manufactured in one piece from plastic using injection molding and are in particular open at the top in order to receive refrigerated products. In order for instance to realize a pleasing appearance of the door tray, the edge of the container can be provided with a frame or a decorative strip.

[0003] The object of the invention is to specify a door tray with a design frame and/or a decorative strip, which can be manufactured in a relatively cost-effective fashion.

[0004] The object of the invention is achieved by a door tray for a refrigeration device, comprising a decorative strip, which has a u-shaped profile in the cross-section with inner surfaces, and a container that is open at the top with an edge, onto which the decorative strip is fitted with the u-shaped profile thereof, with at least one of the inner surfaces being provided at least partially with a material having relatively high static friction that is in contact with the container and fixes the decorative strip to the container merely due to the static friction of said material.

[0005] A further aspect of the invention relates to a domestic refrigeration device having a carcass delimiting a refrigeration chamber and a door attached to the carcass for sealing the refrigeration chamber, on the internal side of which at least one inventive door tray is arranged.

[0006] The inventive door tray accordingly includes the container, which as such can already be used as a door tray for instance, and the decorative strip which is fastened to the container, in particular fitted onto the edge of the container. The decorative strip can comprise the form of a design frame for instance and comprises at least partially a u-shaped profile in the cross-section with the two inner surfaces of which at least one is provided at least partially with the material having relatively high static friction. This material is preferably relatively soft in comparison with the material of the remaining decorative strip and is in contact with the container. On account of the static friction, prerequisites result accordingly such that when fitted, the decorative strip is permanently fixed to the edge of the container and can therefore not slip or even loosen unintentionally. This enables existing (tray) containers for inner doors in refrigeration devices to be equipped for instance with new design frames and/or decorative strips without additional effort, like for instance engagement, adhesion, welding. The connection of the two components, i.e. the (tray) container and the frame and/or the decorative strip is realized by means of the, if necessary, high static friction. The static friction is realized in accordance with the invention by the material with relatively high static friction which is applied to the inner surfaces and which is embodied for instance as a partially attached TPE strip as the second material component on the base frame/decorative strip. The base frame can consist in particular of conventional plastic and may have been manufactured entirely using the injection molding process. This technique enables existing door trays to be changed and/or supplemented without the need for tool modification outlay (time and cost) and new tools by means of a new design.

[0007] According to an embodiment of the inventive door tray, the distance between the two inner surfaces essentially corresponds to the wall thickness of the wall in the region of the edge. A relatively good hold of the decorative strip to the container herewith results, which is strengthened by the material with relatively high static friction.

[0008] The decorative strip can preferably be manufactured from a material which differs from the material with relatively high static friction. In particular, the decorative strip can be manufactured from plastic, as a result of which a relatively cost-effective manufacture of the decorative strip is enabled. The container can also be manufactured from plastic.

[0009] According to a preferred variant of the inventive door tray, the material with relatively high static friction is a rubber-type or rubber-like material. In particular TPE (thermoplastic elastomers) are particularly well suited.

[0010] The material with relatively high static friction can be adhered to the inner surface for instance or fastened to the inner surface using extrusion, thereby enabling a relatively simple manufacture of the decorative strip.

[0011] According to an embodiment of the inventive door tray, the material with relatively high static friction essentially extends over the entire depth of at least one of the inner surfaces of the u-shaped profile of the decorative strip in the cross section. This herewith produces an improved hold of the decorative strip to the container. The width of the material with relatively high static friction may be designed to be variable and can be adjusted in accordance with the given conditions.

[0012] At least one of the inner surfaces of the decorative strip can be provided with a depression, in particular with a groove, which is filled with the material with relatively high static friction. As a result, an improved hold of the material with relatively high static friction to the relevant inner surface is enabled.

[0013] It is possible to provide only one of the two inner surfaces of the decorative strip with the material with relatively high static friction. To better fix the decorative strip to the container, in accordance with a preferred embodiment of the inventive door tray, both inner surfaces are at least partially provided with the material with relatively high static friction.

[0014] For a further improved hold of the decorative strip to the container, those regions of the two inner surfaces, which are provided with the material with relatively high static friction, lie opposite one another.

[0015] In order for instance to at least partially balance out tolerances between the wall thickness of the container and/or of the distance between the two inner surfaces, the surface of the material which is in contact with the container can be structured with relatively high static friction, in particular provided with fins or ribs, which proceed in particular vertically.

[0016] Depending on the embodiment of the inventive door tray, a second, soft component is attached to at least one of the internal sides and/or inner surfaces of the design frame and/or decorative strip, said component comprising a relatively high frictional coefficient. At least one of the sides can comprise additional fins in order to balance out tolerances. This here with enables the decorative strip and/or the frame to adhere to the container without further additives, when pressing the frame and/or the decorative strip onto the existing container, which in particular can as such already represent a door tray. It is also possible to only equip one side (inner or outer side)
of the tray frame and/or the decorative strip with the soft components. This reduces the friction, nevertheless depending on application this may already be sufficient.

The inventive door tray may offer the following advantages depending on embodiment. Reduction in complexity, cost-saving by using existing tray containers with new design-specific components, no adhesion of the decorative strip to the container is necessary, relatively easy to assemble and disassemble without damage to the door tray, process sure, since it can be flashed fully automatically, compensatory tolerances by TPE fins between door tray and frame (components can be produced in different cavities, as a result of which a relatively large tolerance width is produced).

An exemplary embodiment of the invention is shown by way of example in the appended schematic drawings, in which:

FIG. 1 shows a perspective representation of a fridge-freezer with a door tray,

FIG. 2 shows one of the door trays, which comprises a container and a decorative strip,

FIG. 3 shows a top view onto the container,

FIG. 4 shows the decorative strip and

FIGS. 5 and 6 show detailed views of the decorative strip.

FIG. 1 shows a fridge-freezer 1 as an example of a domestic refrigeration device in a perspective representation. In the case of the present exemplary embodiment, the fridge-freezer 1 comprises a carcass and/or a housing 2 with a rear wall 3, two side walls 4 and a separating wall 5, within which a freezer compartment 6 and a refrigeration chamber 7 are arranged. The freezer compartment 6 is separated from the refrigeration chamber 7 by means of the separating wall 5. The fridge-freezer compartment 1 also includes a door 8 attached to the housing 2 for sealing the freezer compartment 6 and a door 9 attached to the housing 2 for sealing the refrigeration chamber 7.

Several worktops 10 are arranged in the refrigeration chamber 7, on which refrigerated products can be placed. The fridge-freezer 1 also comprises a vegetable tray 11 which is arranged in the lower region of the refrigeration chamber 7. The fridge-freezer 1 also comprises a temperature dial 12 with internal illumination, with which the target temperature of the refrigeration chamber 7 and of the freezer compartment 6 can be adjusted.

Door trays 13 to 15 are arranged on the internal side of the door 9, of which the door tray 14 in FIG. 2 is shown in more detail by way of example. The door trays 13, 14 can be embodied similarly to the door tray 14.

In the case of the present exemplary embodiment, the door tray 14 comprises a container 21 that is open at the top, the top view of which is shown in FIG. 3. The container 21 was produced for instance from plastic, in particular in one piece using injection molding and comprises a front wall 22, a rear wall 23, two side walls 24 and a base 25. The container 21 is embodied such that it can be fastened to the internal side of the door 9 in a generally known fashion. Furthermore, the container 21 can be embodied such that as such it can already form a door tray.

In the case of the present exemplary embodiment, the door tray 14 comprises a u-shaped design frame and/or a u-shaped decorative strip 26, which was manufactured in one piece from plastic for instance using an injection molding process. The decorative strip 26 is shown in more detail in FIG. 4, and is fitted onto the edge 27 of the container 21 which is formed by the side walls 24 and the front wall 22 and/or protrudes at least partially over the edge 27. In the fitted and/or protruding state, the decorative strip 26 thus forms at least one part of the edge of the opening of the whole door tray 14. The region of the decorative strip 26, which is fitted onto the front wall 22 of the container 21, is provided with the reference character 28 and the regions of the decorative strip 26, which are fitted onto the two side walls 24 of the container 21, are provided with the reference character 29.

As apparent from FIGS. 5 and 6, in the case of the present exemplary embodiment, the decorative strip 26 comprises a u-shaped profile in the cross-section and essentially includes two u-shaped walls 30, 31 which proceed in parallel with one another, which are connected to an essentially u-shaped connecting wall 32 which is aligned at a right angle to the walls 30 and 31. The two walls 30, 31 therefore form a gap with a gap width b and a depth t. The gap width b corresponds approximately to the wall thickness of the side walls 24 and/or the front wall 22.

When the decorative strip 26 is fitted, the front wall 22 and the side walls 24 both face the inner surfaces 33, 34 of the walls 30, 31 of the decorative strip 26 in the region of the edge 27 of the container 21 or contact the same. The inner surface 35 of the connecting wall 32 rests against the edge 27 of the container 21.

In the case of the present exemplary embodiment, the grooves 36 are filled with a rubber-type or rubber-like material 37, which is relatively soft and ensures relatively high static friction. The decorative strip 26 rests against the side walls 24 of the container 21 with its rubber-type or rubber-like material 37, i.e. the rubber-type or rubber-like material 37 is in contact with the container 21 with the side walls 24 in the region of the edge 27 of the container 21.

In the case of the present exemplary embodiment, the material 37 is TPE, in particular TPE-S. The grooves 36 were molded with the rubber-type or rubber-like material 37 using extrusion for instance. The rubber-type or rubber-like material 37 may however also be otherwise fastened to the inner surfaces 33, 34, like for instance by means of adhesion.

If the decorative strip 26 fits onto the edge 27 of the container 21, the rubber-type or rubber-like material 37 is in contact with both sides of the side walls 24. On account of the relatively high static friction of the rubber-type or rubber-like material 37, the decorative strip 26 is fixed to the container 21 without any further measures.

In order to at least partially balance out tolerances of the gap width b and/or of the wall thickness in particular of the side walls 24, the surface 38 of the rubber-type or rubber-like material 37, which is in contact with the side walls 24 of the container 21, is at least roughened and/or comprises fins and/or ribs 39 in the direction of the depth of the gap, in other words vertically proceeding.

In the case of the present exemplary embodiment, the inner surfaces 33, 34 are provided on both sides respectively in the regions 29 of the decorative strip 26 with the rubber-type or rubber-like material 37, with in particular the
rubber-type or rubber-like materials being arranged opposite one another. It is nevertheless also possible to provide just one of the inner surfaces with the rubber-type or rubber-like material, or also or alternatively in the region of the decorative strip, to provide at least one of the inner surfaces with a rubber-type or rubber-like material.

1-12. (canceled)

13. A door tray for a refrigeration device, comprising:
   a decorative strip having a profile that is u-shaped in cross section;
   a container having an open top, said container having an edge onto which the decorative strip is fitted with the u-shaped profile thereof; and
   a material provided at least partially on an inner surface of the decorative strip and having relatively high static friction, said material contacting the container and fixing the decorative strip to the container merely due to the static friction of the material.

14. The door tray of claim 13, wherein the container has a wall, said inner surface being spaced from another inner surface of the decorative strip at a distance which essentially corresponds to a wall thickness of the wall in a region of the edge.

15. The door tray of claim 13, wherein the decorative strip is manufactured from a material which differs from the material with relatively high static friction.

16. The door tray of claim 13, wherein at least one member selected from the group consisting of the decorative strip and the container is manufactured from plastic.

17. The door tray of claim 13, wherein the material with relatively high static friction is a rubber-type or a rubber-like material.

18. The door tray of claim 13, wherein the material with relatively high static friction is TPE.

19. The door tray of claim 13, wherein the material with relatively high static friction is adhered to the inner surface or is fastened to the inner surface by extrusion.

20. The door tray of claim 13, wherein the material with relatively high static friction essentially extends over a depth of the inner surface of the u-shaped profile of the decorative strip in the cross-section.

21. The door tray of claim 13, wherein the inner surface of the decorative strip is provided with a depression which is filled with the material with relatively high static friction.

22. The door tray of claim 21, wherein the depression is a groove.

23. The door tray of claim 13, wherein the decorative strip has another inner surface provided at least partially with the material with relatively high static friction.

24. The door tray of claim 13, wherein those regions of the inner surfaces, which are provided with the material with relatively high static friction, lie opposite one another.

25. The door tray of claim 13, wherein the material with relatively high static friction has a surface in contact with the container, said surface being structured.

26. The door tray of claim 25, wherein the surface is structured by fins or ribs.

27. The door tray of claim 26, wherein the fins or ribs extend vertically.

28. A domestic refrigeration device, comprising:
   a carcass which delimits a refrigeration chamber;
   a door attached to the carcass for sealing the refrigeration chamber; and
   at least one door tray arranged on an internal side of the door, said door tray comprising: a decorative strip having a profile that is u-shaped in cross section, a container having an open top, said container having an edge onto which the decorative strip is fitted with the u-shaped profile thereof, and a material provided at least partially on an inner surface of the decorative strip and having relatively high static friction, said material contacting the container and fixing the decorative strip to the container merely due to the static friction of the material.

29. The domestic refrigeration device of claim 28, wherein the container has a wall, said inner surface being spaced from another inner surface of the decorative strip at a distance which essentially corresponds to a wall thickness of the wall in a region of the edge.

30. The domestic refrigeration device of claim 28, wherein the decorative strip is manufactured from a material which differs from the material with relatively high static friction.

31. The domestic refrigeration device of claim 28, wherein at least one member selected from the group consisting of the decorative strip and the container is manufactured from plastic.

32. The domestic refrigeration device of claim 28, wherein the material with relatively high static friction is a rubber-type or a rubber-like material.

33. The domestic refrigeration device of claim 28, wherein the material with relatively high static friction is TPE.

34. The domestic refrigeration device of claim 28, wherein the material with relatively high static friction is extruded.

35. The domestic refrigeration device of claim 28, wherein the material with relatively high static friction essentially extends over a depth of the inner surface of the u-shaped profile of the decorative strip in the cross-section.

36. The domestic refrigeration device of claim 28, wherein the inner surface of the decorative strip is provided with a depression which is filled with the material with relatively high static friction.

37. The domestic refrigeration device of claim 36, wherein the depression is a groove.

38. The domestic refrigeration device of claim 28, wherein the decorative strip has another inner surface provided at least partially with the material with relatively high static friction.

39. The domestic refrigeration device of claim 28, wherein those regions of the inner surfaces, which are provided with the material with relatively high static friction, lie opposite one another.

40. The domestic refrigeration device of claim 28, wherein the material with relatively high static friction has a surface in contact with the container, said surface being structured.

41. The domestic refrigeration device of claim 40, wherein the surface is structured by fins or ribs.

42. The domestic refrigeration device of claim 41, wherein the fins or ribs extend vertically.