A thermoformed packaging tray is provided which includes a container having a bottom surface, an integrally formed peripheral side wall extending upwardly from the bottom surface. The sidewall defines an open top. A rigid lip is provided on a top edge of the peripheral side wall; and a remote end of the lip which diminishes in thickness to become flexible.
THERMOFORMED PACKAGING TRAY

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Patent Application No. 61/476,173, filed Apr. 15, 2011, the entire disclosure of which is incorporated herein by reference.

FIELD

[0002] The invention relates to the field of thermoformed packaging trays.

BACKGROUND

[0003] Presently, thermoformed packaging trays are used to package food items such as meats for sale in grocery stores. Food items are selected, and placed on the thermoformed packaging trays, which are then encased with overwrap film. Overwrap film can be placed on manually, or a wrapping machine can be used to speed efficiency. Standard thermoformed packaging trays do not work well with wrapping machines as the overwrap film tends to tear during the process of applying the overwrap. Moreover, thermoformed packaging trays can collapse or become damaged during the wrapping process. This slows down the efficiency of wrapping machines. Finally the overwrap may wear along the sharper edges of the thermoformed packaging trays resulting in holes and leakage. Contamination of the food product can occur as a result of holes in the overwrap, and surrounding items may also become contaminated.

SUMMARY

[0004] There is provided thermoformed packaging tray which includes a container having a bottom surface, an integrally formed peripheral side wall extending upwardly from the bottom surface. The sidewall defines an open top. A rigid lip is provided on a top edge of the peripheral side wall; and a remote end of the lip which diminishes in thickness to become flexible.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] These and other features will become more apparent from the following description in which reference is made to the appended drawings, the drawings are for the purpose of illustration only and are not intended to be in any way limiting, wherein:

[0006] FIG. 1 is a perspective view of the thermoformed packaging tray.

[0007] FIG. 2 is a side elevation view of the thermoformed packaging tray.

[0008] FIG. 3 is a front elevation view of the thermoformed packaging tray.

[0009] FIG. 4 is a side elevation view, in section, of the thermoformed packaging tray.

[0010] FIG. 5 is a detailed side elevation view, in section, of the thermoformed packaging tray.

[0011] FIG. 6 is a top plan view of the thermoformed packaging tray.

[0012] FIG. 7 is a bottom plan view of the thermoformed packaging tray.

[0013] FIG. 8 is a front elevation view of the thermoformed packaging tray containing a product and wrapped in transparent overwrap.

[0014] FIG. 9 is perspective view of the thermoformed packaging tray containing a product and wrapped in transparent overwrap.

[0015] FIG. 10 is a top plan view of the thermoformed packaging tray with strengthening portions in the diagonal flow channels.

[0016] FIG. 11 is a top plan view on an elongated rectangular packaging tray with more than one strengthening portion.

DETAILED DESCRIPTION

[0017] A thermoformed packaging tray generally identified by reference numeral 10, will now be described with reference to FIGS. 1 through 11.

Structure and Relationship of Parts:

[0018] Referring to FIG. 1, there is illustrated a thermoformed packaging tray generally referenced by numeral 10. Thermoformed packaging tray 10 is a container 12 that has a bottom surface 14 and an integrally formed peripheral side wall 16 that extends upwardly from the bottom surface 14. The sidewall 16 is at an angle from the bottom surface 14. The sidewall 14 defines an open top 18. In the illustrated embodiment, thermoformed packaging tray 10 has a first end 20, a second end 22 and two opposed sides 24 defined by sidewall 16. A rigid lip 26 is provided on a top edge 28 of the peripheral side wall 16. A shoulder 30 is provided between the top edge 28 of the peripheral side wall 16 and the lip 26. The lip 26 curves over. A remote end 32 of the lip 26 is offset at an angle, and diminishes in thickness by more than 60% to become flexible such that it curves downward as illustrated in FIG. 5.

[0019] Referring to FIG. 4, tray 10 is thermoformed from PET (Polyethylene terephthalate), PVC (Polyvinyl chloride), HIPS (High Impact Polystyrene), PS (polystyrene) and PP (polypropylene) materials with high strength that is specific for food products such as meat, fish, and poultry, but can also be used well with non-food products. To increase the strength of thermoformed packaging tray 10, and prevent fracture or collapse of the tray 10, bottom surface 14 rises convexly upwardly toward its centre 34. Referring to FIGS. 2 and 4, leaf shaped ribs 36 are provided along peripheral wall 16. Leaf shaped ribs 36 serve to prevent any buckling effect caused by load on thermoformed packaging tray 10. Each leaf shaped rib 36 curves outward from convexly from sidewall 16. Each leaf shaped rib 36 has a central stem portion 38 and a leaf portion 40 which fans out from central stem portion 38. Stabilizing ribs 42 are also provided in bottom surface 14 to allow thermoformed packaging tray 10 to rest flat on an underlying surface 44 as shown in FIG. 3.

[0020] Leaf shaped ribs 36 are positioned along side wall 16 in between stabilising ribs 42 and in corners 46 that from where first end 20, second end 22 and opposed sides 24 of peripheral sidewall 16 join.

[0021] Referring to FIGS. 6 and 7, in the illustrated embodiment, a plurality of intersecting flow channels 48 are provided in bottom surface 14 for strength as well as flow such as drainage. In the illustrated embodiment, the intersecting flow channels 46 are recessed into the bottom surface 14 and preferably extend diagonally across the bottom surface 14, although it will be appreciated that other types of patterns.
such as traversely extending flow channels also could be used. In the illustrated embodiment the flow channels 48 are wider near the centre 34 of the bottom surface 14, and narrower toward the sidewall 16. Referring to FIGS. 6 and 7, a recessed flow channel 50 also extends around a perimeter 52 of the bottom surface 14. Recessed flow channel may be in communication with the plurality of intersecting flow channels.

[0022] Referring to FIGS. 5 and 6, a groove 54 runs along an apex 56 of the lip 26 of peripheral sidewall 16 to provide additional strength to thermoformed packaging tray 10. Groove 54 can be of varying dimensions and depths but it is preferable that it is in the range of 0.03 to 0.08 inches across.

Variations

[0023] Referring to FIG. 10, one or more of diagonally extending flow channels 48 and peripheral flow channel 50 may have strengthening portions 58 that interrupt the flow. These portions 58 may be inverted portions of the flow channel 48 or filled in to as to strengthen the packaging tray 10. As consumers pick up packaging tray 10, typically by the corner 48, the packaging tray 10 may have a tendency to fold or collapse under its load. Strengthening portions 58 are strategically placed in the peripheral flow channel 50 on the opposed sides intermediate the corners 48. Strengthening portions 58 may also be placed in the intersecting flow channels 48. It is preferable that the strengthening portions 58 are placed in a diamond pattern 60 near the centre 34 of the bottom surface 14. Referring to FIG. 11, where packaging tray 10 is an elongated rectangle, more than one diamond pattern 60 of strengthening portions 58 may be used to prevent folding or collapse.

[0024] Referring to FIG. 5, lip 26 that extends outward from top edge 28 of peripheral side walls 16 gradually decreases in thickness toward a remote end 44 such that lip 26 has increased flexibility so as to curve under. The reduction in thickness is gradual and will be approximately 60% or less of the parent material used to fabricate thermoformed packaging tray 10. By way of example, if the parent material is 20 ml in thickness at groove 54, then lip 26 will be reduced to 5 ml thickness at remote end 32. As further examples, if the parent material is 15 ml thickness then lip 26 will be reduced to 3.75 ml at remote end 32, and if the parent material is 13 ml thickness at groove 54 then lip 26 will be reduced to 3 ml thickness at remote end 32. The thinning of lip 26 allows it to be more flexible so as to curve under gently. Referring to FIG. 8 and FIG. 9, the added flexibility helps to prevent overwrap film 62 from being torn or ripped when thermoformed packaging tray 10 contains a product 64 and is being either manually or automatically wrapped in a wrapping machine (not shown).

[0025] In this patent document, the word “comprising” is used in its non-limiting sense to mean that items following the word are included, but items not specifically mentioned are not excluded. A reference to an element by the indefinite article “a” does not exclude the possibility that more than one of the element is present, unless the context clearly requires that there be one and only one of the elements.

[0026] The following claims are to be understood to include what is specifically illustrated and described above, what is conceptually equivalent, and what can be obviously substituted. Those skilled in the art will appreciate that various adaptations and modifications of the described embodiments can be configured without departing from the scope of the claims. The illustrated embodiments have been set forth only as examples and should not be taken as limiting the invention. It is to be understood that, within the scope of the following claims, the invention may be practiced other than as specifically illustrated and described.

What is claimed is:

1. A thermoformed packaging tray, comprising:
   - a container having a bottom surface, an integrally formed peripheral side wall extending upwardly from the bottom surface, the sidewall defining an open top;
   - a rigid lip is provided on a top edge of the peripheral side wall; and
   - a remote end of the lip which diminishes in thickness to become flexible.

2. The thermoformed packaging tray of claim 1, wherein the rigid lip curves over and outward from the peripheral sidewall.

3. The thermoformed packaging tray of claim 1, wherein the remote end of the lip is diminished in thickness by more than 60 percent.

4. The thermoformed packaging tray of claim 1, wherein the remote end of the lip is offset at an angle.

5. The thermoformed packaging tray of claim 1, wherein the remote end of the lip curves downward.

6. The thermoformed packaging tray of claim 1, wherein the bottom surface rises convexly upward.

7. The thermoformed packaging tray of claim 1, wherein a plurality of intersecting recessed flow channels extend across the bottom surface.

8. The thermoformed packaging tray of claim 5, wherein a portion of a one or more of the plurality of intersecting recessed flow channels are inverted.

9. The thermoformed packaging tray of claim 1, wherein a recessed flow channel extends around the perimeter of the bottom surface.

10. The thermoformed packaging tray of claim 8, wherein one or more portions of the recessed flow channel extending around the perimeter of the bottom surface are inverted.

11. The thermoformed packaging tray of claim 1, wherein leaf shaped stabilizing ribs are spaced along the peripheral side wall perpendicular to the bottom surface.

12. The thermoformed packaging tray of claim 1, wherein a groove is extends along the apex of the lip.