A package for granular, pasty or liquid products, provided with a tearing opening, wherein at the tearing opening, on the inside of the package, there is applied a strip (3) pre-cut in two slices (4, 5) by a separation line (6) which extends parallel to the upper edge (2) of the package, so that during tearing the tear proceeds straight along the separation line (6).
PACKAGE MADE OF FLEXIBLE MATERIAL WITH TEARING OPENING

0001 The present invention refers to a package made of flexible material, for granular, pasty or liquid products, provided with a tear-off or tearing opening.

0002 The package according to the invention can be of any known type, for example stand-up package, that is, which is self-supporting when filled with the product, having a reinforced base, from which extend two side walls heat-sealed along the side and top edges, or can be a parallelepiped package with upper and lower bellows closures.

0003 Packages of the above type, or other similar ones, with tearing opening, have a cut or notch near the upper edge of the package, at one side thereof, to promote tearing of the material, which should proceed parallel to the upper edge, of the package, something which does not normally happen.

0004 In order to try to bring about straight cutting of the package, it has been proposed that a cut should be made, normally by laser, in the outer layer, for example of polyester, of the normally multilayer material that forms the package.

0005 However, it can happen that the tear promoting notch made on the side of the package is not perfectly aligned with the laser cut, causing tearing to deviate from the straight cut, something which can also happen even if the tear promoting notch is perfectly aligned with the cut.

0006 In order to try to overcome in part this drawback it has also been proposed to make two laser cuts parallel to each other at a distance of 3-4 mm, so as to ensure that the tear promoting notch is disposed between the two laser cuts and the tear proceeds between them.

0007 Among other things, these systems of the prior art are also costly because they require the installation of laser systems.

0008 It should also be considered that if a mistake is made in setting the laser power, besides cutting the outer layer, it risks cutting the whole package, or an intermediate barrier layer, thus losing the barrier effect.

0009 U.S. Pat. No. 5,552,202 discloses a tear guide arrangement for opening a package comprising a pair of opposing base strips and a pair of opposing tear guide strips. The base strips are composed of resilient polymeric material, whereas the tear guide strips are composed of a stiff or tough polymeric material having a substantially higher tensile strength than the resilient material of the base strips. The stiff polymeric material of the tear guide strips ensures that the tear guide strips separate cleanly from the respective base strips and this stiff material provides the mass essential to a bond rupture.

0010 Object of the invention is to overcome the drawbacks of the above-mentioned systems of the prior art, by providing a package that ensures perfectly straight tearing during the opening stage.

0011 Another object of the invention is that of providing such a package with tearing opening that is simple and cheap to make.

0012 These objects are achieved by the package according to the invention, which has inside its side walls, near the upper edge, a strip pre-cut longitudinally in two slices heat sealed to said walls. A tear promoting notch aligned with the pre-cut line of the strip is advantageously provided at one side edge of the package.

0013 In this manner, when the package is to be opened, on applying opposing traction forces at the two separate slices of the strip, the tear proceeds straight along the separation line, being prevented from deviating from said line by the presence of the material of the slices, which should in turn be torn.

0014 Further characteristics of the invention will be made clearer by the detailed description that follows, referring to a purely exemplifying and therefore non limiting embodiment thereof, illustrated in the appended drawings, in which:

0015 FIG. 1 is a plan view from the inside of a die-cut blank from which a package with tearing opening according to the invention can be obtained;

0016 FIG. 2 is an enlarged view of the top right corner of the die-cut blank of FIG. 1;

0017 FIGS. 3 and 4 show diagrammatically two successive stages in the formation of a package according to the invention;

0018 FIG. 5 is an enlargement of a detail of the package of FIG. 4;

0019 FIG. 6 is a view like that of FIG. 5 showing the start of the tearing stage.

0020 With reference to FIG. 4, a purely exemplifying package, indicated by reference numeral 10, to which can be applied the tearing opening system of the present invention, which will be described in greater detail below, has a substantially parallelepiped shape, and has a bottom wall or base 11, a top wall 12, a front wall 13, a rear wall 14 and two side walls 15 and 16.

0021 This package is formed starting from a strip of multilayer sheet material, with the inner layer heat-sealable, which is fed along a mandrel normally disposed vertically, around which it is closed by means of a longitudinal weld S so as to form a tube which is closed at the bottom by means of a transverse heat seal SI followed by a bellows fold F1 (FIG. 4), after having been cut to the right length to form the package 10.

0022 The tube closed at the bottom, in the form of a bag, is filled with a pre-set amount of granular, pasty or liquid product, and is subsequently closed at the top by means of a further transverse weld SP and subsequent bellows folding F2.

0023 FIG. 1 shows the development of the package 10 seen from the inside, with the fold lines to obtain the package indicated.

0024 As stated, the material forming the package is normally a multilayer material, with an inner heat-sealable layer, for example polyethylene and possibly an intermediate barrier layer, such as aluminium. The outer layer is advantageously polyester.

0025 According to the invention, near the upper edge 2 of the die-cut blank 1, below the area where the upper weld SP is made, a strip 3 pre-cut longitudinally into two halves or slices 4, 5 along the cutting line 6 which runs parallel to the upper edge 2 of the die-cut blank 1 or of the package 10, is disposed on the inside of the die-cut blank.

0026 The strip or ribbon 3 is heat-sealable on both sides, so as to be able to be heat-sealed to the inside wall of the package 10 and allow the welds to be made to obtain a tight seal of the package, in the case in point the vertical weld S in the area where the strip is applied.

0027 The strip 3 is advantageously also made of multilayer sheet material, the outer heat-sealable layers of which are polyethylene or derivatives thereof, for example.
The strip 3, or rather the two slices 4, 5 separated by the longitudinal cut 6, are disposed on the inside of the package 10 at least on the opposite front 13 and rear 14 walls as outlined in FIG. 3.

A notch 20, aligned with the cutting line 6 of the strip 3 (FIG. 5) is made at a side edge of the package, acting as a tear promoter.

In order to open the package, by pulling in opposite directions on the upper edge of the package, at the slices 4, 5 of the strip 3, a perfectly straight tear of the package material along the separation line 6 between the slices 4, 5 is obtained, as shown diagrammatically in FIG. 6.

The straightness of the tear of the package is ensured by the separation line 6 between the two slices 4, 5, which forms a sort of track along which the tear is obliged to run.

In fact, any deviation of the tear from this separation line 6 would imply triggering of a tear in one of the two slices 4, 5, which is extremely improbable, given that the resistance of the material of the slices would have to be overcome.

The invention achieves the intended object even with minimum thicknesses of the pre-cut strip 3, but it is obvious that the greater its thickness, the greater the guarantee that the tear will follow the separation line 6 of the strip.

The applicant has performed numerous tests on packages of various types and has been able to verify the perfect performance of the tearing opening system according to the invention.

Thus, for example, in the package shown in the appended figures, it has been possible to ascertain that the tear proceeds without particular problems even in the area affected by the vertical weld S, where there is a superimposition of materials, but where the separation line 6 between the slices 4 and 5 is in any case present.

In the appended figures the pre-cut strip 3 has been provided along the entire horizontal extent of the package, but it is obvious that it can be provided in pre-set areas which come to be opposed in the formed package, preferably reaching a side edge thereof, especially if complete opening of the package is not required.

Although a parallelepiped package obtained from a tube with a vertical S-shaped weld has been shown in the figures, the tearing opening system according to the invention can be applied to other types of package, for example with “fin” seals along the four vertical edges of the package, as well as to stand-up packages, and so forth.

Obviously the invention is not restricted to the particular embodiment described previously and illustrated in the appended drawings, but numerous modifications of detail within the reach of a person skilled in the art can be made thereto, without thereby departing from the scope of the invention as set forth in the appended claims.

1-10. (canceled)

11. A package made of flexible material upside closed by means of a weld (SP) at or close to the upper edge (2) thereof and provided with a tearing opening below said weld (SP), characterized in that, at said tearing opening below said weld (SP) and inside the package, a strip (3) made of a sheet material is applied, which is pre-cut in two halves or slices (4), (5) along a separation line (6) running parallel to said upper edge (2) of the package, such that during the tear-off operation the tearing proceeds along said separation line (6).

12. The package according to claim 11, wherein said pre-cut strip (3) is applied within opposite walls of the package (10).

13. The package according to claim 11, characterized in that said pre-cut strip (3) engages all the length of the package (10) or a portion thereof.

14. The package according to claim 11, characterized in that a tearing promoting notch (20) is provided on a side edge of the package in alignment with said separation line (6) between the slices (4), (5) of the pre-cut strip (3).

15. The package according to claim 11, characterized in that said pre-cut strip (3) is heat sealable on both sides thereof, thereby being able to be heat sealed within the package (10) and allowing welds for closing the package to be carried out in the area where it is placed.

16. The package according to claim 11, characterized in that it is made of a multilayer material, wherein the inner layer is made of a heat sealable material, such as polyethylene.

17. The package according to claim 11, wherein said pre-cut strip (3) is made of a multilayer sheet material, wherein the outer made of a heat sealable material, such as polyethylene or derivative thereof.

18. The package according to claim 11, which is parallelepiped in shape with a lower bellows closure (F1) and an upper bellows closure (F2).

19. The package according to claim 11, wherein said package (10) is of the stand-up type.

20. The package according to claim 11, suitable for containing granular, pasty, liquid materials, and the like.

21. The package according to claim 12, characterized in that said pre-cut strip (3) engages all the length of the package (10) or a portion thereof.

* * * * *