

Digestive biscuits in foil roll with tear-strip

The biscuits are packed in a roll of metallised foil with a tear-strip near the top end of the packaging for easy opening (Figure 1). The flap for opening is 1 cm long and the tear-strip is marked with the text: TEAR HERE.

Focus areas

The opening mechanism of the packaging works in this way: Using the tear-strip you 'unzip' the packaging in a straight line following the round shape of the packaging. As the tear-strip is supposed to be a built-in opening friendliness we study whether the end user uses this mechanism. We do this by conducting end user studies where we observe the opening strategy. Furthermore we examine the use of graphics on the packaging and the physical force needed to open the packaging mechanically as well as subjectively through the user study.



Figure 1 Foil roll with tear-strip is studied.

REFERENCE TO GUIDELINE: Physical force, Graphics and choice of colour, Opening strategy.

Design

The tear-strip is marked with TEAR HERE. It is not very clear, however, as the choice of colour blends in with the rest of the packaging graphics. This could easily be made clearer by using a sharper contrast or larger print.

Mechanical test

A traction bench was used for measuring the physical force needed (Figure 2). This opening technique is considered to be similar to what the end user does to open the packaging. The pulling force was measured to $3\pm 1\text{N}$ when pulling the tear-strip.



Figure 2 Mechanical measurement of the pulling strength needed for the tear-strip in the foil roll.

End users' physical force needed

A calculation model has been developed for the guideline estimating the end user's critical force needed related to different packaging types. Based on dimensions and force measured the model illustrates which people potentially could have difficulties opening the packaging.

The model for flaps and bags was chosen for the test. The calculation model states based on the measured criteria that practically all men and women are able to open the packaging (Figure 3). However, it is important to remember that the calculation model only considers whether it is physically possible based on the force needed and dimensions measured and not whether the end user is able to get a good grip on the tear-strip and actually uses it in the opening situation.

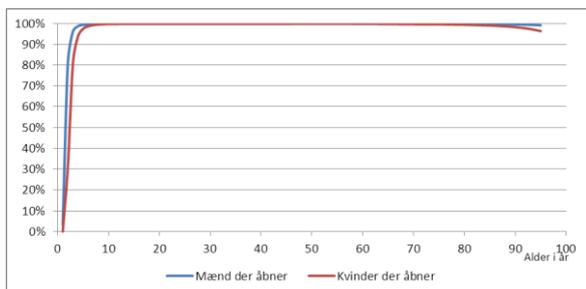


Figure 3 Share of men and women who can open flaps requiring 3N to open with a flap length of 1 cm (Model based on data from DTI, UK 2002).

End user test

In relation to an evaluation of the new technical specification "DD CEN/TS 15945:2011 Packaging. Ease of opening. Criteria and test methods for evaluating consumer packaging" user tests were conducted in 2008 at Danish Technological Institute with a similar packaging. Test users consisted of 34 randomly chosen elderly people in the age group of 50-90 yrs. Of these 1/3 was men and 2/3 were women. Half of the group had a physical ailment, e.g. arthritis in the hands. The group was asked to open the packaging and then evaluate how easy or difficult they found it on a scale from 1 to 5 where 1 is very easy and 5 is very difficult or impossible to open. The result is depicted in Table 1.

Table 1 End user test of how the packaging with tear-strip was to open on a scale from 1-5, where 1-2 is easy to open and 4-5 is difficult or impossible to open. The test group consisted of 34 persons, men (M), women (F), with (D) or without (N) physical ailments affecting their hands. Number of persons in the group is given in parentheses.

End user's evaluation of the packaging	MD (1)	FD (11)	MN (7)	FN (11)	total (34)
Difficult to open	0 %	9 %	0 %	0 %	6 %
Easy to open	100 %	91 %	71 %	82 %	94 %

The results of the mechanical test and the end user study substantiate each other as both regard the packaging as being easy to open. Only one woman with arthritis had difficulties opening the packaging in the end user study.

During the end user study we observed that even though several test persons did not use the built-in tear-strip the packaging was still considered as being easy to open. Several persons furthermore commented that they preferred opening the packaging from the top as the packaging then would be easier to re-seal. If the tear-strip on the contrary was used the roll of biscuits then would have to be put in a bag in order to

keep them dry. It is always a good idea to design the packaging in such a way that more alternative methods can be used.

Several of the test persons did not discover the opening mechanism (the tear-strip) and thus opened the packaging from the top. This emphasizes the initial observations that the graphics are vague related to being a help for the end user to discover the built-in opening mechanism.

Conclusion

The calculation model and the end user study had comparable results as they both found the packaging as being easy to open. This is partly due to the fact that very little force was needed and that more alternative opening methods were a success and therefore considered easy to open by the end user panel. The reason why everybody did not apply the same method to open the packaging was that everybody did not discover the built-in opening mechanism and that several end users preferred a more desirable way of resealing the packaging after having opened it from the top.

The packaging can be improved using two angles: 1) better graphics making the end user aware of the tear-strip 2) developing a new opening method in order to make the re-sealing function more user-friendly.

These suggestions to improvements are pretty obvious. If the company requires more unorthodox or innovative solutions we suggest that a workshop for idea generation is held (see User-friendly Packaging - Guideline for the industry).