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Packaging — Accessible design — Ease of opening

Emballages — Conception accessible — Facilité d'ouverture



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 122, *Packaging*.

Introduction

In our ageing world, there has been increasing awareness of full and effective participation of older persons and persons with disabilities in society on an equal basis. A common challenge facing the packaging industry in the world is to develop packages which are easy to open for more people, including older persons and persons with disabilities.

Ease of opening in packaging adds more value to the usability of packaged products. In addition to sealing performance, greater consideration needs to be given to ease-of-opening function when designing packaging.

While degrees of ease of opening and satisfaction of opening can vary widely in ages, sex, physical ability, and features, etc., this International Standard addresses essential points to enhance ease of opening in packaging from accessible design viewpoints.

Packaging — Accessible design — Ease of opening

1 Scope

This International Standard specifies requirements and recommendations for the accessible design for packaging with a focus on ease of opening. It applies to reclosable and non-reclosable consumer packaging without using any other mechanical means. This International Standard covers the design aspects addressing openability including opening location, opening methods, as well as evaluation techniques, both instrumented and user-based. This International Standard is primarily for designers, developers, and evaluators of packaging and will also be useful for other disciplines.

For products regulated for safety or other reasons (e.g. toxic or dangerous goods and substances, medicinal products, and medical devices), those regulations take precedence.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21067, *Packaging — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21067 and the following apply.

3.1

consumer packaging

packaging, constituting, with its contents, a sales unit to the final user or consumer at the point of retail

[SOURCE: ISO 21067]

3.2

openability

extent to which package contents can be accessed easily with regards to human factors (e.g. strength, dexterity, and cognition)

Note 1 to entry: Packaging with poor openability means that the contents are perceived as difficult to access.

3.3

strength

amount of force needed to achieve an intended task

3.4

dexterity

extent to which a user can manipulate and handle an object

3.5

cognition

extent to which a user can understand the appropriate information as it is intended

3.6

instrument-based evaluation

evaluation that uses measurement instruments to obtain quantified data, such as force and torque levels in physical testing

3.7

user-based evaluation

evaluation that uses a method involving users with or without the use of measurement instruments and provides insight into the user's sensory, physical, and cognitive aspects

3.8

reclosable package

package which, after it has been initially opened, is capable of being reclosed with a similar degree of security and is capable of being used a sufficient number of times to dispense the total contents without loss of security

[SOURCE: ISO 8317:2003]

3.9

pull-tab package

package that can be opened by pulling the ring installed on the upper or side part of the package

Note 1 to entry: It is the general term for full-open tab package, stay-on tab package, and any other tab-attached package.

3.10

full-open tab package

package whose lid can be fully opened by pulling the tab

3.11

stay-on tab package

package that can be opened by pulling the tab which will not be detached after the package is opened

4 Accessible design of ease of opening

4.1 General

4.1.1 Context of use

The packaging design shall encompass the context of use for the package. This should be achieved by considering the following:

- identification of the main goals (e.g. access to the contents);
- identification of the tasks needed to achieve intended goals (e.g. gripping, lifting, pulling, etc.);
- specify intended users, taking into consideration the variety of physical, psychological, and cultural characteristics;
- specify the environments in which the package is (or is intended to be) used. Those attributes of the physical or social environment are likely to have impacts on achieving the goals.

4.1.2 Opening strength

The nominal force to open the package shall be achievable by the intended users. This force should be as low as possible without compromising the packaging integrity. Information on aspects of opening strength is shown in [Annex C](#).

4.1.3 Dexterity

The packaging opening mechanism shall be designed so that it is easily manipulated by the users with the widest range of characteristics and capabilities. Information on aspects of dexterity is shown in [Annex C](#).

4.1.4 Cognition

Opening of the packaging shall be designed so that it is easily understood by the user. Consideration should be given to a user's sense of touch, sight, etc. Information on human cognitive, visual and tactile aspects is shown in [Annex E](#).

4.2 Specific considerations

4.2.1 Opening location

The opening location shall be readily found and its use easily understood. This can be achieved by applying the following design considerations.

- The opening location is differentiated by visual markings using characters and/or imagery, such as pictograms.
- Visual markings are designed by appropriate combinations of colour, font size, font type, etc.
- The opening location is differentiated by tactile markings using shape, notches, embossing, texture, etc.

NOTE Supporting data for human cognitive, visual and tactile aspects is in [Annex E](#).

4.2.2 Methods and mechanisms of opening the package

The opening method and mechanism shall be easily identifiable and intuitively understandable. This can be achieved by applying the following design considerations.

- The opening methods and mechanisms (turn, tear, peel, pull, push, etc.) are clearly shown if not evident.
- The package is designed so that it can be opened smoothly, irrespective of the size or power of the users' hands.
- The package is designed in such a way that spillage is prevented and that there is no risk of injury for the user.

4.2.3 Force and handling aspects

The forces and handling aspects of the opening shall result in favourable openability.

The nominal force to open the package shall accommodate the large variety of the opening strength by the intended user (e.g. children, people with disabilities, and older people) and the packaging integrity.

The package and its opening mechanisms shall be easily manipulated, taking into account the large variety of users' dexterities (e.g. children, people with disabilities, older people, etc.).

NOTE Supporting data for strength and dexterity is in [Annex C](#).

4.2.4 Reclosing of the package

Reclosing of the package (if applicable) shall be easy. This can be achieved by applying the following design considerations:

- reclosing method is easily understood if not clear immediately;
- reclosing method and procedure are made clear by using characters/imagery, such as pictograms with appropriate combinations of their size, font, contrast, and colour;
- reclosable packages are designed so that they can be re-opened smoothly.

EXAMPLE A touch or auditory (e.g. click) mechanism is used for reclosable packages to affirm that the package has been reclosed.

5 Evaluation of ease of opening

5.1 General

Instrument-based evaluation uses measuring instruments to obtain quantified data, such as force and torque levels in physical tests.

Instrument-based methods in their current form (as shown in [Annex B](#)) will provide indicative measures as to the nominal values of opening torque or force required but are unlikely to establish exact limits on a user's ability.

Hence, user-based studies are needed to be undertaken in parallel with instrument-based studies to complement the results from those tests (i.e. if instrument evaluation consistently predicts lower opening forces on Pack A than Pack B, we would expect Pack A to be opened by more people more easily).

User-based evaluation relies on methods involving humans with or without the use of measuring instruments.

It provides insight into the user's sensory, physical, and cognitive aspects of accessibility.

5.2 Instrument-based evaluation

Instrument test methods can provide quantitative data with regards to certain attributes, such as removal torque, peel strength, and ring pull force (mechanical). Evaluation of package design properties such as glare, colour contrast, friction, size, weight, and temperature can be measured by different types of instruments.

When designing a packaging to be easy to open, the data obtained from mechanical tests should be used in combination with other design criteria of importance, as those described under [Clause 4](#). See [Annex B](#) and [Annex C](#).

The data generated by these instrument-based evaluation test methods can be used to compare characteristics of related packaging systems and to provide possible insights for improved designs.

5.3 User-based evaluation

Panel tests enable the qualitative assessment of packaging designs and allow the development of an understanding of users approach to packaging openability and handling. Panel tests can be used in conjunction with other qualitative research methods such as questionnaires and structured or unstructured interviews. Panel tests can aid in the development process and the resulting data can inform on the performance of a packaging against predetermined criteria.

The data generated by these user-based evaluation test methods can provide possible insights for improved designs.

Instead of testing with the general population, one can select a test population from those that are most sensitive based on their characteristics and capabilities in use of the packaging. The result will be valid also for the general population that are less sensitive. An example of this is the selection of a panel in the CEN 15 945 containing people in the ages between 65 and 80, which is regarded to be more sensitive than the general population. General information on how to set up and perform user-based evaluation can be found in the ISO 20282 series. See [Annex D](#) and [Annex E](#).

To enable a fast screening of relevant basic features with regard to information design and handling of consumer packaging, a checklist is included as [Annex F](#).

6 Conformance

Conformance with this International Standard is achieved by satisfying all the requirements.

If a package is claimed to have met the requirements in this International Standard, the procedure used to determine how they have been met shall be specified. The detail to which the procedure is specified is a matter of negotiation between the involved parties.

Users of this International Standard may either utilize the procedure and forms provided in [Annex G](#) or develop another procedure tailored to their particular needs.

Annex A (informative)

Examples of opening-types

A.1 Turn to open

A screw cap can increase the accessibility of opening.

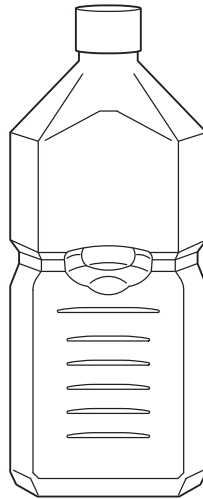


Figure A.1 — Screw top bottle

A.2 Tear to open

Notch or perforation helps open the package easily with fingertips.



Figure A.2 — Heat-sealed flexible bags

A.3 Tear (apart) to open

The opening tab large enough to pinch and/or perforation applied on the film help open the package easily.



Figure A.3 — Shrink film

A.4 Peel to open

The opening tab large enough to pinch helps open the package easily.



Figure A.4 — Heat-sealed semi-rigid containers

A.5 Pull to open

The lid can be easily removed by putting a finger into the ring and pulling it up.



Figure A.5 — Pull-tab packages

A.6 Push to open

The package will easily open by pushing through the back sheet (made of aluminium foil, paper, etc.).



Figure A.6 — Blister packages, a carton box, etc.

A.7 Push (up) to open

The package will open easily by pushing the intended part.



Figure A.7 — Hinged cap, a push-and-open container, etc.

A.8 Pinch and peel to open

The package will open easily by pinching and peeling the intended part.

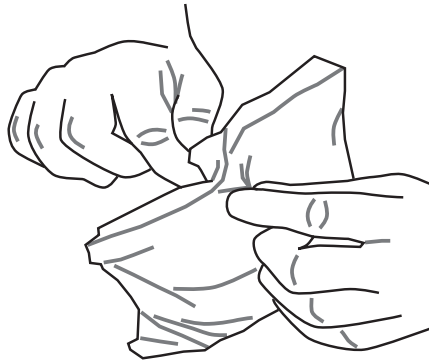


Figure A.8 — Flexible bag