



**International  
Standard**

**ISO 7683**

**Design criteria and test methods for  
removable shrink labels applied to  
PET bottles**

*Critères de conception et méthodes d'essai pour les étiquettes  
rétractables et détachables appliquées sur les bouteilles en PET*

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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 122, *Packaging*, Subcommittee SC 3, *Performance requirements and tests for means of packaging, packages and unit loads (as required by ISO/TC 122)*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

PET bottles can be used as recycled materials for making high value-added recycled products. For effective recycling, the recycling facility will potentially need to separate the label from the bottle according to the manufacturer's advice. For this purpose, a structure such as the perforated line on the shrink labels is provided to remove them easily from bottles by consumers.

Depending on the shape of the bottle, the material and thickness of the label, the size of the perforation holes and the spacing between the holes, it can still be difficult for the consumer to separate the shrink label from the bottle, even though the perforated line on the shrink label is provided.

The aim of this document is to help packaging suppliers in designing their PET bottles and shrink labels, such that a broad range of consumers find it easy to separate the shrink label from the PET bottle, thereby encouraging the effective recycling of PET bottles.

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# Design criteria and test methods for removable shrink labels applied to PET bottles

## 1 Scope

This document provides design criteria and test methods to evaluate the removability of shrink labels applied to PET bottles when the packaging supplier intends that the shrink label is to be separated by the consumer or recycling facility, including:

- a) design criteria such as visual indications of the starting point of separation, finger tab or initiation cuts, label material, shape of bottle, hole size and spacing between holes of perforated shrink sleeves, perforated line, and a tool for improving removability;
- b) test methods for removability including information on preparing samples and panels, a test procedure and an evaluation method.

This document is applicable to packaging suppliers that want to help consumers to easily separate shrink labels from PET bottles and effectively recycle PET bottles during waste collection.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21067-1, *Packaging — Vocabulary — Part 1: General terms*

ISO 21067-2, *Packaging — Vocabulary — Part 2: Packaging and the environment terms*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21067-1, ISO 21067-2 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **shrink label**

label that adheres packaging material to the product or package surface using heat

Note 1 to entry: The packaging material used is typically plastic film.

### 3.2

#### **supplier**

entity responsible for placing packaging or packaged goods on the market

Note 1 to entry: The term “supplier” in normal usage can relate to various points in a supply chain. For the purpose of this document, it relates to any point in the supply chain where a transaction relating to packaging or packaged goods takes place.

[SOURCE: ISO 18601:2013, 3.22]

### 3.3

#### **removability**

ability of label separation from a bottle by hand(s) without any tools

### 3.4

#### **perforated line**

holes made into a film that allow parts of a label to be separated easily by hand along the dotted line

### 3.5

#### **starting point of separation**

beginning part of the *shrink label's* (3.1) perforation line

### 3.6

#### **finger tab**

tab designed for easy manual removal along perforations

### 3.7

#### **visual indication of label separation**

text or symbol that indicates from where to remove the label

EXAMPLE Arrow symbol that indicates the starting point of the *perforated line* (3.4), and text such as “remove label from here”.

### 3.8

#### **height of label**

length of the label from the top to the bottom

## 4 Design criteria

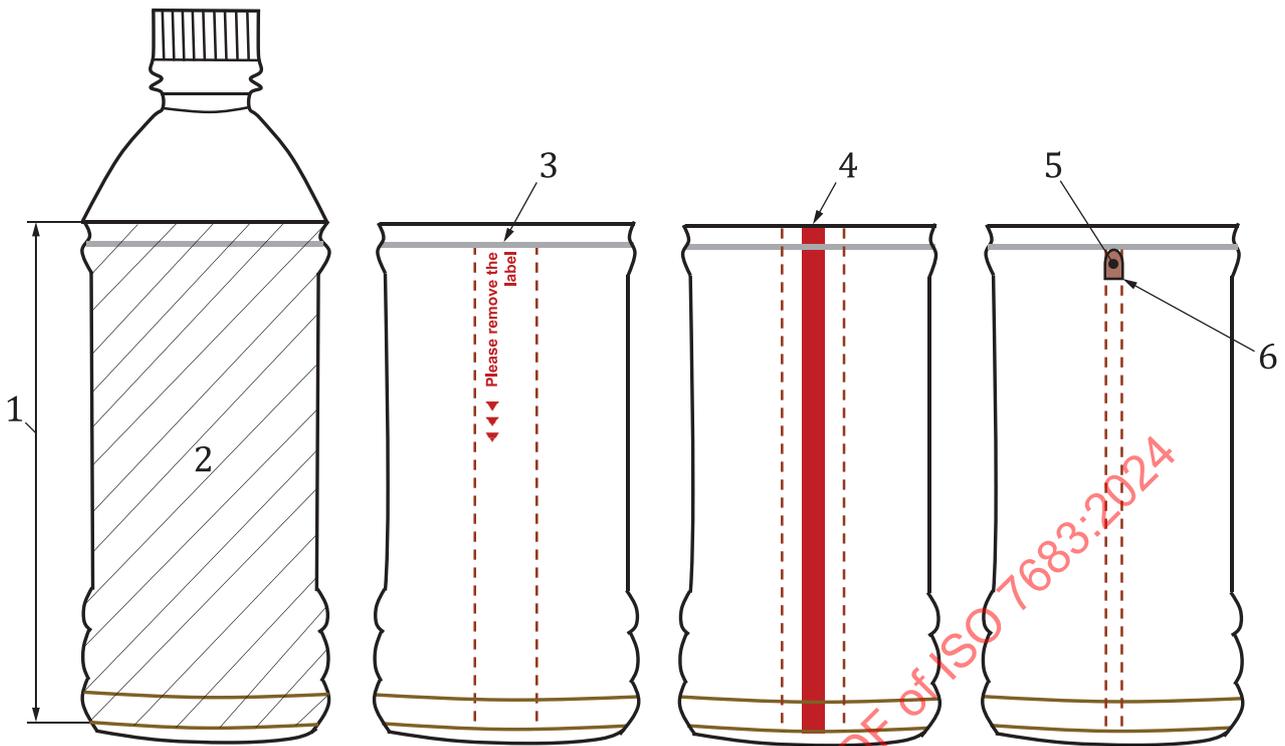
### 4.1 General

When designing the label, the following should be considered so that the consumer and recycling facility can easily remove the shrink label from the PET bottle:

- visual indications of label separation, such as arrow symbols, which can help the consumer to identify the starting point of separation;
- indicating messages, such as “pull here to remove the label”;
- finger tabs or initiation cuts at the starting point of the separation when visual indication of label separation are not enough;
- an alternative tool or structure, such as a tear tape, if the other options listed in this subclause are not available.

The label should be designed for people with physical limitations by using tactile cues, such as specific shapes, notches or textures to identify the starting point of separation in the shrink label.

Examples of structural designs for easily removable shrink labels applied to PET bottles are shown in [Figure 1](#).



**Key**

- |   |                              |   |            |
|---|------------------------------|---|------------|
| 1 | height of label              | 4 | tear tape  |
| 2 | shrink label                 | 5 | finger tab |
| 3 | starting point of separation | 6 | initiation |

**Figure 1 — Conceptual structure of easily removable shrink labels applied to PET bottles**

**4.2 Design criteria**

**4.2.1 Visual indications of the starting point of separation**

The label should be designed so that the consumer can easily identify and understand the starting point of separation on the shrink label. The visual indication of the starting point of separation should be in accordance with ISO 19809, ISO 11156 and/or through the use of:

- visual representations such as an arrow or pictogram;
- a message that is easily readable through appropriate use of formatting, combining colour, font size and font type.

**NOTE** If consumers have difficulty in identifying the starting point of separation on the shrink label, they are more likely to stop trying to separate the label from the bottle and will possibly discard the bottle without separation.

**4.2.2 Finger tab or initiation cuts**

A finger tab or initiation cuts should be incorporated on the shrink label so that the consumer can easily remove the shrink label from the bottle.

**4.2.3 Label material**

The label material shall be selected to help ease the removal task, such that it does not negatively impact PET recycle. The label material shall not be damaged during the production, printing or distribution process.

#### 4.2.4 Shape of bottle

The shape of the bottle should not restrict or make it difficult to remove the shrink label.

#### 4.2.5 Size of holes and spacing between holes

The size of the holes and the spacing between the holes shall be designed so that the perforated line does not break during the label application or distribution process. The perforated lines should be made using a laser or a sharp and precise knife. The shape of the hole should not change during the shrink process.

NOTE A larger perforation hole size and a smaller spacing between the holes can improve the removability of the shrink label.

#### 4.2.6 Perforated line

The perforation line(s) shall not restrict or make it difficult to remove the shrink label.

#### 4.2.7 Improving removability

An additional feature, for example a tear tape, should be added to improve removability where it is difficult to remove the shrink label due to factors such as the type of content, the production process, the material of label or the shape of the bottle.

### 5 Test methods for removability

#### 5.1 Sample and panel preparation

PET bottles with shrink labels of the identical material as intended to be placed on the market shall be prepared for the removability test.

The number of samples shall be determined by the size of the panel.

The size of the panel comprises at least 10 persons. The gender and age ratio should be representative of the intended and expected consumers who will use the product. For example, products aimed at small children should also be tested on adults (of all ages) who are likely to purchase and dispose of the product for the child.

#### 5.2 Test procedure for removability

##### 5.2.1 General

The removability test for a shrink label shall be evaluated in accordance with [Figure 2](#), and both of the following tests shall be performed:

- ease of identifying the starting point of separation on a shrink label (see [5.2.2](#));
- ease of separation of a shrink label (see [5.2.3](#)).

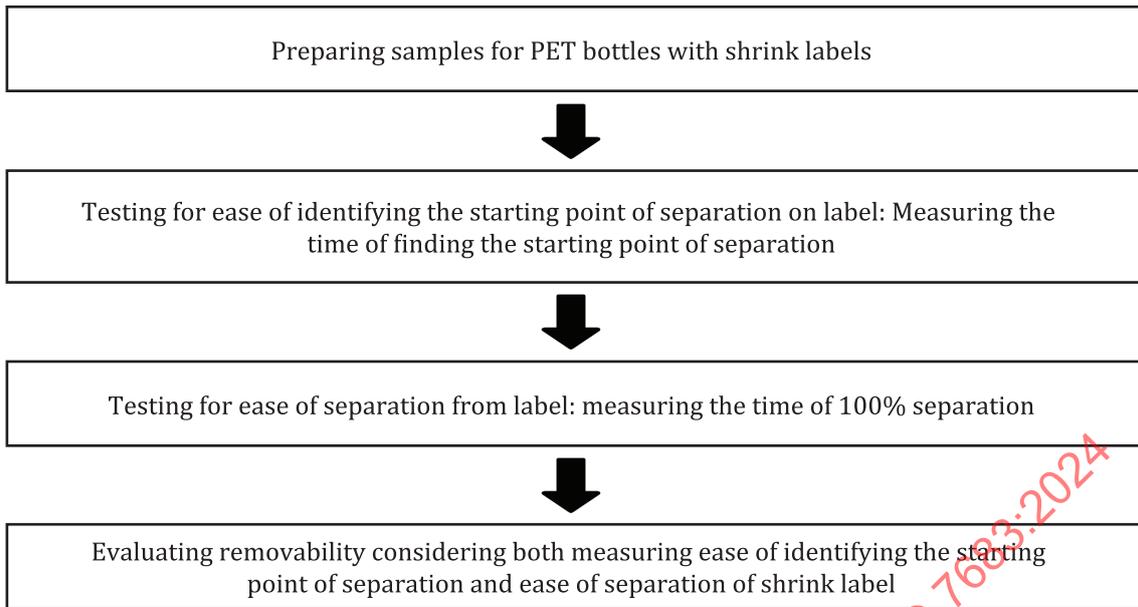


Figure 2 — Test procedure for measuring the removability of shrink label

### 5.2.2 Test method for ease of identifying the starting point of separation on a shrink label

Count the number of panellists who are able to easily identify the starting point of separation within 5 s.

The ease of identifying the starting point of separation shall be calculated by the ratio of the number of panellists who are able to easily identify the starting point of separation of the perforated line or finger tab to the total number of participating panellists. This calculation shall be determined as the ratio of ease of identifying the starting point of separation on a label. See [Formula \(1\)](#).

$$R_i = P_i / P_t \times 100 \quad (1)$$

where

- $R_i$  ratio of ease of identifying the starting point of separation on label;
- $P_i$  panellists who identify the starting point of separation;
- $P_t$  total number of participating panellists.

### 5.2.3 Test method for ease of separation of a shrink label

The ease of separation of a shrink label shall be determined by measuring whether the panellist can remove the label within a certain period of time. The evaluation method is as follows:

- a) Instruct the panellist to grab the starting point of separation of perforated line or finger tabs of the label.
- b) Count the number of panellists who are able to successfully separate the label within 10 s.
- c) Determine the ease of separation of a shrink label by calculating the ratio of the number of successful panellists to the total number of panellists, see [Formula \(2\)](#).

$$R_s = P_s / P_t \times 100 \quad (2)$$

where

$R_s$  ratio of ease of label separation;

$P_s$  number of panellists who are able to successfully separate the label within 10 s;

$P_t$  total number of participating panellists.

### 5.3 Evaluation method for removability of a shrink label

The ease of removability of a shrink label shall be evaluated as “excellent” if both the ratio of ease of identifying the starting point of separation on a shrink label and the ratio of ease of separation of a shrink label are over 90 %.

## 6 Test report

The test report shall include the following information:

- a) the sample descriptions (shape of the bottle: label material, thickness and height: size, spacing and ratio of perforated holes, etc.);
- b) the panel descriptions (size of panel, its gender and age ratio and on which basis the gender and age ratio has been selected (e.g. in case of products aimed at children, which should also be tested on adults);
- c) reference to this document, i.e. ISO 7683:2024;
- d) the results including :
  - i) ratio of ease of identifying the starting point of separation on label ( $R_i$ ), see [5.2.2](#);
  - ii) ratio of ease of label separation ( $R_s$ ), see [5.2.3](#);
  - iii) ease of removability of a shrink label (excellent), see [5.3](#).
- e) any deviations from the procedure;
- f) any unusual features observed;
- g) the date of the test.

Refer to [Annex A](#) for an example of a test report.