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**Sensory analysis — Assessment  
(determination and verification) of  
the shelf life of foodstuffs**

*Analyse sensorielle — Évaluation (détermination et vérification) de la  
durée de conservation des produits alimentaires*

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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. [www.iso.org/directives](http://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. [www.iso.org/patents](http://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 34, *Food products*, Subcommittee SC 12, *Sensory analysis*.

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## Introduction

Measurements of product changes over time provide a basis for the determination and verification of the shelf life of foodstuffs (best before date and use by date).

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# Sensory analysis — Assessment (determination and verification) of the shelf life of foodstuffs

## 1 Scope

This International Standard specifies methods for the determination and verification of the shelf life of foodstuffs by means of sensory tests. Sensory characteristics to be evaluated are changes in appearance, odour, flavour, taste, trigeminal sensation, and texture during assumed preservation periods.

It is intended to support the development of individual approaches.

This International Standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

**NOTE** For the purposes of calculating the shelf life, before microbiological, chemical and physical investigation results are used in addition to sensory testing.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable to 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 5492, *Sensory analysis — Vocabulary* ISO 16779:2015  
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## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5492 and the following apply.

### 3.1

#### **best before date**

date of minimum durability (best before date) which signifies the end of the period under any stated storage conditions during which the product will remain marketable and will retain any specific quality for which claims have been made

Note 1 to entry: Date before the product may still be perfectly satisfactory.

### 3.2

#### **use by date**

date which signifies the end of the estimated period under any stated storage conditions, after which the product probably will not have the quality attributes normally expected by consumers

Note 1 to entry: After this date, the food should not be regarded as marketable.

### 3.3

#### **specified storage condition**

specified environmental parameter kept constant over a defined period of time

### 3.4

#### **not specified storage condition**

environmental parameter which arise depending on the environment and may change over time

3.5

**storage condition intended to accelerate product changes**

environmental parameter applied to accelerate changes of the specific characteristics of a product

3.6

**sampling plan**

specification of the starting point, the test period, the test intervals, the expected endpoint, the suitable test method, the number and amount of test samples and reference samples, and the storage conditions

3.7

**starting point**

first date of test, beginning of the test series

3.8

**test period**

period of time over which the product-specific characteristics are investigated

3.9

**test interval**

defined period of time between the individual sensory tests within the test period

3.10

**endpoint**

last date of test, end of the test series

3.11

**test method**

suitable method (sensory and, if relevant, physical, chemical and/or microbiological) for verification shelf life assessment

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3.12

**reference sample**

product with which the product to be tested is compared

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**4 Procedure**

**4.1 General**

A sampling plan comprising the specification of a starting point, the test period and the intended test intervals is prepared in accordance with 4.4. The test and reference samples are selected in accordance with 4.2. Then the test samples are subjected to a systematic storage (see 4.3). The sensory test is performed within the test intervals, up to the end point, applying the suitable test methods. Afterwards the results are evaluated.

**4.2 Selection of the test and reference samples**

**4.2.1 Test samples**

Test samples used for the determination and/or verification of the shelf life shall be representative for the respective product as far as recipe, manufacturing process and packaging technique are concerned.

The samples should be present in the packaging intended to be used for distribution. For the purposes of orienting preliminary tests, the test samples may also have been produced on test plants or on the laboratory scale. When examining the shelf life, the test samples may also be taken from among commercially available products.

If necessary, the test samples may be subjected to typical storage and distribution conditions (e.g. exposure to light, temperature and humidity variations, shaking or vibration, respectively).



#### 4.2.2 Reference samples

The test samples should be compared with the respective reference sample.

A reference sample can be any of the following:

- a) the standard used so far and descriptive data obtained in previous sensory tests and available at the starting point, e.g. results of the investigation of profiles or of descriptive tests;
- b) a representative reference sample freshly produced for each test interval;
- c) a reference sample stored under conditions minimizing changes of the specific product characteristics during the assessment period, such as storage under colder conditions or under a modified atmosphere.

The reference samples can be complemented by data obtained in consumer surveys.

#### 4.2.3 Number and amount of the required test and reference samples

Number and amount of the test and the reference samples required over the whole test period depend on the test intervals specified in the sampling plan, the sensory test method, the test set-up, the nature of foodstuff and the storage conditions.

### 4.3 Storage conditions

#### 4.3.1 Specified storage conditions

The storage conditions shall be specified in order to, for example, reproduce the channel of distribution of a product and to include changes of temperature, humidity, light, atmospheric pressure and the simulation of seasonal changes of the weather (temperature variations), packaging-related behaviour (migration, permeability to oxygen, water vapour barrier perforation, etc.).

Specified storage conditions shall be recorded.

#### 4.3.2 Not specified storage conditions

Not specified conditions are conditions which can arise during proper storage, as a result of the environmental conditions. They shall meet the product-related requirements and correspond with the storage conditions encountered in practice.

The conditions of not specified storage or their changes, respectively, shall be recorded.

#### 4.3.3 Storage conditions intended to accelerate product changes

Accelerating storage conditions is intended to promote faster changes in characteristic attributes for products of long shelf life and use by date.

In cases of products with a longer shelf life (such as frozen fully preserved food and dried foodstuffs) shortening of the test period by means of accelerating product changes may be advisable.

Accelerating storage conditions shall be adapted to the product.

Accelerating storage conditions can be both specified and not specified and shall be recorded.

In the absence of prior data that would suggest otherwise, an estimation of how to shorten the test period, the Arrhenius law may be useful when the shelf life of a product is linked to water activity.

An increase of the storage temperature can save time with regard to the determination or verification of the shelf life of certain products; however, the values thus obtained only approximately reflect the product's behaviour under normal storage conditions.