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Sensory analysis — General guidelines for the selection, training and monitoring of selected assessors and expert sensory assessors

Analyse sensorielle — Lignes directrices générales pour la sélection, l'entraînement et le contrôle des sujets qualifiés et sujets sensoriels experts

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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).

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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.

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 12, *Sensory analysis.*

This second edition of ISO 8586 cancels and replaces ISO 8586:2012.

Introduction

A sensory analysis panel constitutes a true "measuring instrument", and consequently the results of the analysis depend on its members.

The recruitment of persons willing to participate in a panel therefore needs to be carried out with care and to be considered as a real investment, both in time and money.

Sensory assessment can be performed by four types of assessors (Figure 1):

— Naïve sensory assessors;

— Screened sensory assessors;

— Trained sensory assessors;

— Expert sensory assessors.
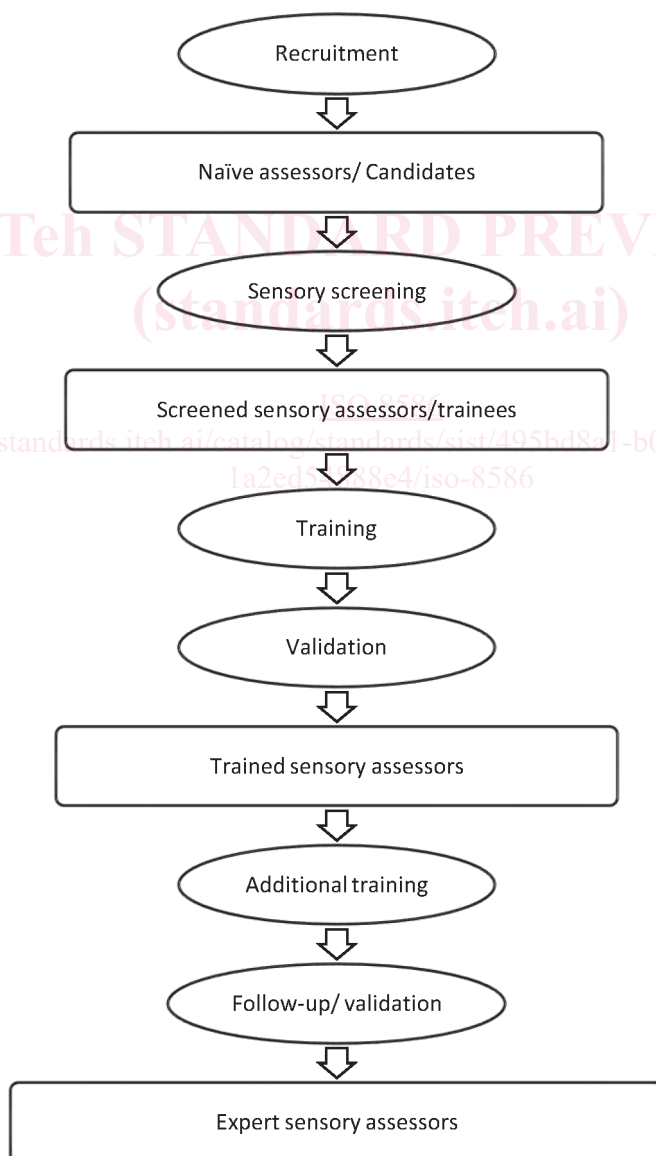
Figure 1 — Recruitment, screening and training process of sensory assessors

It is necessary to undertake a preliminary selection of the candidates at the recruitment stage, in order to eliminate those who would be unsuited for sensory analysis. The final selection can be made after screening and ultimately training. The selection and training methods to be employed depend on the tasks intended for the "trained sensory assessors" and "expert sensory assessors".

Sensory assessors work as a panel which is managed by a panel leader. In certain cases (especially for descriptive sensory analysis), the panel may be divided into specialized subgroups.

The recommended procedure for the recruitment of a sensory panel involves:

a) recruitment and preliminary screening of naive assessors/candidates;

b) screening of naive assessors/candidates, selection of whom are to become screened sensory assessors/trainees;

c) training and validation of screened sensory assessors, selection of whom then become trained sensory assessors;

d) possible additional training of trained sensory assessors to become expert sensory assessors.

The exact procedures covered by a) and b) and the nature of the tests performed in c) and d) depend on the tasks intended for the panel.

The panel leader is responsible for the general follow-up of the group of expert sensory assessors and for their training. The expert sensory assessors are not responsible for the choice of tests used, the presentation of the samples or for the interpretation of results. These matters are the responsibility of the panel leader who also decides how much information is given to the panel.

The performance of selected assessors should be monitored regularly to ensure that the criteria by which they were initially selected continue to be met. For monitoring and validation procedures see ISO 11132.

The entire process for the recruitment of a sensory panel is illustrated in Figure 1.

Sensory analysis — General guidelines for the selection, training and monitoring of selected assessors and expert sensory assessors

WARNING — This document does not address any safety issues that may be associated with its use. Appropriate safety practices need to be dictated by the user. Compliance with any national regulatory statutes is the responsibility of the user.

1 Scope

This International Standard specifies criteria for the selection and procedures for the training of trained sensory assessors and expert sensory assessors for food and beverages, as well as home and personal care products. This standard supplements the information given in ISO 6658.

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 5492:2008, *Sensory analysis — Vocabulary*

ISO 6658, *Sensory analysis — Methodology — General guidance*

ISO 8589, *Sensory analysis — General guidance for the design of test rooms*

ISO 3972, *Sensory analysis — Methodology — Method of investigating sensitivity of taste*

ISO 5496, *Sensory analysis — Methodology — Initiation and training of assessors in the detection and recognition of odours*

ISO 11036, *Sensory analysis — Methodology — Texture profile*

ISO 11132, *Sensory analysis — Methodology — Guidelines for the measurement of the performance of a quantitative descriptive sensory panel*

ISO 13299, *Sensory analysis — Methodology — General guidance for establishing a sensory profile*

3 Terms and definitions

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
sensory assessor
any person taking part in a sensory test

Note 1 to entry: A naive assessor is a person who does not meet any particular criterion.

Note 2 to entry: An initiated assessor has already participated in a sensory test.

3.2
screened sensory assessor
sensory assessors who have been screened for their sensory abilities

3.3
trained sensory assessor
sensory assessors who have been trained for a method or methods

3.4
expert
in the general sense, a person who, through knowledge or experience, has competence to give an opinion in the fields about which he/she is consulted

3.5
expert sensory assessor
sensory assessor with a demonstrated sensory sensitivity and with considerable training and experience in sensory testing, who is able to make consistent and repeatable sensory assessments of various products

3.6
panel training
series of sessions in which assessors are oriented to the tasks to be completed by a sensory panel and practice assessing particular product(s), which may include relevant product characteristics, standard rating scales, techniques of evaluation and terminology

3.7
sensory panel
group of assessors participating in a sensory test

3.8
panel consensus
agreement (individual rating and agreement check or shared ratings and discussion-based agreement) among assessors regarding terminology and intensity of product characteristics

3.9
repeatability
the ability of an assessor to repeat their own results

Note 1 to entry: Repeatability related to sensory analysis is defined as a measure of the agreement between assessments on the same sample under the same conditions.

3.10
repeatability conditions
observation conditions where independent test/measurement results are obtained with the same method on identical test/measurement items in the same test facility or measuring facility by the same observer using the same equipment within short intervals of time

Note 1 to entry: Repeatability conditions include:

— the same measurement procedure or test procedure;

— the same observer;

— the same measuring or test equipment used under the same conditions;

— the same location;

— repetition over a short period of time.

Note 2 to entry: Short intervals of time related to sensory analysis are defined as the repetition over the same session.

[SOURCE: ISO 3534-2:2006, 3.3.6]

3.11
reproducibility
agreement in assessments of the same products under different test conditions or by different assessors or panels

Note 1 to entry: Reproducibility may be measured as any of the following:

— the reproducibility of a panel (or an assessor) in the short term, measured between two or more sessions separated by several days;

— the reproducibility of a panel (or an assessor) in the medium or long term, measured among sessions separated by several months;

— the reproducibility between different panels, in the same laboratory or in different laboratories.

3.12
reproducibility conditions
observation conditions where independent test/measurement results are obtained with the same method on identical test/measurement items in different test or measurement facilities with different operators using different equipment

Note 1 to entry: Reproducibility conditions related to sensory analysis may include using the same method during different times (sessions), different environments, facilities, and panels.

[SOURCE: ISO 3534-2:2006, 3.3.11]

3.13
session
period of time where the assessors work on a specific task or evaluate a number of samples, either individually or as a group

Note 1 to entry: A session typically spans from 30 min-2 h.

4 Selection of assessors

4.1 General

The following general characteristics are desirable for willing candidates for training:

a) they shall be motivated and interested in further developing their sensory skills;

b) they shall be able to participate;

c) they shall not have any sensory impediments related to the purpose of the test.

4.2 Recruitment

4.2.1 General

To recruit candidates and to screen those most suitable for training, follow 4.2.2 to 5.7.

4.2.2 Recruitment

There are three important considerations for the recruitment of people for a sensory panel:

• Where should people be recruited from to constitute the group?

• How many people shall be selected?

• How shall the people be selected?

The following sections provide answers to these questions.

4.2.3   Types of recruitment

4.2.3.1   General

Two types of recruitment are available to organizations:

— company staff recruited from within the organization (internal recruitment);

— recruit people from outside the organization (external recruitment).

It is possible to constitute a mixed panel from both types of recruitment.

4.2.3.2   Internal recruitment

Internal candidates are recruited from office, plant or laboratory staff. It is advisable to avoid those persons who are too personally involved with products or projects being examined, in particular those involved at the technical or commercial level, because they may cause the results to be biased.

In this type of recruitment, it is vital that the organization's general management and hierarchy provide their support and make it known that sensory analysis is considered as part of everyone's work. This can be made known at the hiring stage of the personnel.

4.2.3.3   External recruitment

The recruitment is conducted outside the organization.

The most commonly used means for this purpose are advertisement of the role, for example in local press, social media or through suitable clubs or groups.

4.2.4   Advantages and disadvantages of internal and external recruitment

4.2.4.1   General

Organizations may wish to use independent internal or external panels for different tasks.

4.2.4.2   Internal recruitment

4.2.4.2.1   Advantages

The advantages are:

— the people are available at short notice as they work on site;

— it is not necessary to make provision for any payment (however, in order to maintain interest, it may be desirable to offer incentives);

— a better confidentiality regarding the results is ensured, which is particularly important for research work;

4.2.4.2.2   Disadvantages

The disadvantages are:

— problems related to the hierarchy of the organization;

— candidates are influenced in their judgements by knowledge of the products;

— it is difficult to allow for the evolution of the organization's products (people are influenced by their changing familiarity with the organization's products);

— replacement of candidates is more difficult (limited number of persons in small organizations);

— less choice of people;

— lack of availability due to conflicting priorities;

4.2.4.3   External recruitment

4.2.4.3.1   Advantages

The advantages are:

— a wide range of choice;

— a subsequent supply of new potential assessors by word of mouth;

— no problems with hierarchy;

— easier selection, without the risk of offending people if they are unsuitable;

— candidate availability.

4.2.4.3.2   Disadvantages

The disadvantages are:

— the method can be seen to be expensive (remuneration, paperwork);

— this method is better suited to urban communities where there is a sufficient number of inhabitants; in rural areas, it may not be easy to obtain sufficient suitable people in the area, but advantage can be taken of people associated with co-operatives (e.g. milk, wine) — in this case, the risk that some candidates are influenced in their judgment because of their experience shall be taken into account;

— since it is necessary that the individuals be available, a disproportionate number of retired, unemployed or students are sometimes encountered because it is more difficult to recruit those in full-time employment;

— after having paid for the selection and training, there is a risk that people leave at a moment's notice.

4.2.5   Number of persons to be selected

Experience has shown that, after the recruitment, the selection procedures eliminate approximately half or more of the people for reasons such as sensory ability, knowledge and aptitude.

The number of persons to be recruited varies depending on the following elements:

— the financial means and the requirements of the organization;

— the types and frequency of tests to be conducted.

As not everyone will pass the selection criteria, it may be necessary to interview and screen many more people than is actually required to constitute the final panel, e.g. in order to obtain a panel of 12 screened assessors for a descriptive analysis panel, as many as 70 or more people may need to be screened, and a minimum of 18 persons should be selected for training.

For specialized purposes and different types of sensory tests, a higher number of assessors can be required.