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**Sensory analysis — General guidance for
the selection, training and monitoring of
assessors —**

Part 2:
Experts

*Analyse sensorielle — Guide général pour la sélection, l'entraînement et
le contrôle des sujets —*

Partie 2: Experts



Reference number
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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8586-2 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 12, *Sensory analysis*.

ISO 8586 consists of the following parts, under the general title *Sensory analysis — General guidance for the selection, training and monitoring of assessors*:

- *Part 1: Selected assessors*
- *Part 2: Experts*

Annexes A, B and C of this part of ISO 8586 are for information only.

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Introduction

0.1 Sensory assessment may be made by three different types of assessor, referred to as "assessors", "selected assessors" and "experts" as in ISO 5492. The selection, training and monitoring of selected assessors is the subject of ISO 8585-1. This part of ISO 8586 is concerned with experts.

0.2 Assessors who are designated selected assessors work as a panel and 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. Monitoring is by comparison with the panel as a whole.

0.3 There are two types of expert: expert assessors and specialized expert assessors.

An **expert assessor** will have demonstrated particular acuity in panel work, and will have developed a good long-term sensory memory, permitting reliable comparative judgements, when necessary, in the absence of control samples.

A **specialized expert assessor** will, however, draw on additional knowledge gained in other fields, such as knowledge of the product to be assessed, and process or marketing experience, in order to interpret sensory data and make deductions.

0.4 This part of ISO 8586 is concerned mainly with the principles of selecting for, training in and monitoring of sensory ability and sensory memory, with only guidelines on monitoring of performance, which should always be checked regularly.

Although it should not be necessary to make specific reference to the methods of training which are applied in particular commercial trades, a few illustrations are given in the annexes to show the range of approaches.

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Sensory analysis — General guidance for the selection, training and monitoring of assessors —

Part 2: Experts

1 Scope

This part of ISO 8586 describes criteria for choosing people with particular sensory skills from selected assessors or from product, process or marketing specialists who themselves satisfy the selection criteria specified in ISO 8586-1. It gives principles and procedures for expanding their knowledge and abilities to the levels required for experts assessors.

It supplements the information given in ISO 6658.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8586. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8586 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5492:1992, *Sensory analysis — Vocabulary*.

ISO 6658:1985, *Sensory analysis — Methodology — General guidance*.

ISO 8586-1:1993, *Sensory analysis — General guidance for the selection, training and monitoring of assessors — Part 1: Selected assessors*.

3 Definitions

For the purposes of this part of ISO 8586, the definitions given in ISO 5492 and the following definitions apply.

NOTE 1 The differences between the various types of assessor are summarized in table 1, together with examples of the ways in which they may perform their tasks.

3.1 assessor (sensory): Any person taking part in a sensory test.

3.1.1 naive assessor: A person who does not meet any particular criterion.

3.1.2 initiated assessor: A person who has already participated in a sensory test.

3.2 selected assessor: Assessor chosen for his/her ability to carry out a sensory test.

3.3 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.

NOTE 2 In sensory analysis there are two types of expert, the expert assessor and the specialized expert assessor. These are further defined in 3.3.1 and 3.3.2.

3.3.1 expert assessor: Selected assessor with a high degree of sensory sensitivity and experience in sensory methodology, who is able to make consistent and repeatable sensory assessments of various products.

Table 1

Type of assessor	Definition	Characteristics additional to those of the preceding level	Possible advantages of using such assessors
Selected assessor	Assessor chosen for his/her ability to perform a sensory test.		
Expert assessor	Selected assessor with a high degree of sensory sensitivity and experience of sensory methodology, who is able to make consistent and repeatable sensory assessment of various products.	<p>Good consistency of judgments, both within a session and from one session to another.</p> <p>Good long-term sensory memory.</p>	<p>A smaller number of assessors is required for a given degree of reliability in the results.</p> <p>Long-term sensory memory and accumulated experiences can allow recognition of particular attributes, such as taints.</p> <p>Evidence from an expert panel is more persuasive, for example, in a court of law.</p>
Specialized expert assessor	Expert assessor who has additional experience as a specialist in the product and/or the process and/or marketing, and who is able to perform sensory analysis of the product and to evaluate or predict effects of variations relating to raw materials, recipes, processing, storage, ageing, etc.	<p>Extensive experience in the relevant specialist field.</p> <p>Highly developed ability to recognize and evaluate sensory properties.</p> <p>Mental retention of reference standards.</p> <p>Recognition of key attributes.</p> <p>Deductive skills which may be applied to problem solving.</p> <p>Good ability to describe and communicate conclusions or to take appropriate action.</p>	<p>A specialized expert assessor takes full responsibility for all judgements, comments and estimates, including tasks undertaken by a panel leader.</p> <p>Gives advice on sensory aspects of contractual or legal matters.</p> <p>Assesses at an early stage any need for changes in processing or formulation.</p> <p>Predicts how the product will change over time during production and storage.</p> <p>Predicts the practical consequences of changes in the product caused by variation in raw materials, manufacture, storage, etc.</p>

3.3.2 specialized expert assessor: Expert assessor who has additional experience as a specialist in the product and/or the process and/or marketing, and who is able to perform sensory analysis of the product and to evaluate or predict effects of variations relating to raw materials, recipes, processing, storage, ageing, etc.

4 Selection

4.1 General

The following general characteristics are desirable in candidates for training:

- they should already have had some experience of sensory analysis, and have shown aptitude for it, as confirmed by reference to ISO 8586-1;
- they should be motivated by an interest in further developing their sensory skills, in both the field of sensory analysis and in that of products;

- they should be available for training and regular practice, and for gaining more experience in the range of products submitted to them.

4.2 Potential expert assessors

Panel leaders should, whenever possible, evaluate the performance of the selected assessors, over a period of time and on the products concerned. Any selected assessors who show good repeatability, noteworthy acuity, or particular aptitude regarding specific attributes (e.g. a taint) or classes of materials, should be considered for use on panels of expert assessors.

4.3 Potential specialized expert assessors

4.3.1 As the costs of training may be high, it is important to evaluate the potential of a candidate, particularly of a volunteer who may have insufficient technical grounding or inadequate sensory skills. Also, evaluation should be designed to identify possible problem areas suitable for remedial training.

4.3.2 Desirable characteristics of candidates for training as specialized expert assessors include:

- a) a memory for sensory attributes;
- b) the ability to keep clear and logical notes;
- c) background knowledge of the range of products, acquired, for example, from lectures, books, trade press and technical contact;
- d) knowledge of technical aspects (such as raw materials, production and distribution) of the products concerned;
- e) an ability to communicate with other experts and with non-experts.

The extent to which candidates for training possess these characteristics will vary and their training programme will need to be adjusted accordingly.

4.3.3 The process for nomination of trainees differs according to the type of product, the organization of the trade and the location of the candidate. For instance, nomination may be by the employer (especially for in-house training), by a trade organization or by volunteering.

5 Training (see annex A)

5.1 General

The training differs from that required for selected assessors, described in ISO 8586-1 and which is complementary, in that it will normally place a greater emphasis on self-discipline. For selected assessors, the skills will have previously been gained through the training tests described in ISO 8586-1, whereas product, processing or marketing specialists will need to follow this training. Subclauses 5.2 to 5.8 deal with particular aspects in which training is needed by a trainee expert in sensory analysis. One of the aims is to optimize the technical knowledge of the experts by training and development of their sensory potential. Candidates should possess some knowledge of the physiology of taste and smell, of psychology, and of the basic methods of statistics, and should take all available opportunities to participate in the sensory tests given in ISO 6658 and other International Standards in order to learn how results are interpreted and used.

1) ISO 8587:1988, *Sensory analysis — Methodology — Ranking*.

2) ISO 8588:1987, *Sensory analysis — Methodology — "A" - "not A" test*.

5.2 Sensory memory

The tests used to train a selected assessor rely largely on short-term sensory memory, whereas long-term sensory memory is essential for the expert assessor as well as the specialized expert assessor. Characteristics noted in a current assessment may need to be related to experience of earlier assessments.

5.3 Identification and recognition of key product characteristics by the trainee specialized expert assessor

During early stages of training, if lacking the required knowledge of the product, the trainee will need to acquire this by reading adequately specialized books and from the advice of experts. Such information should be constantly tested against personal experience as the long-term memory develops.

An expert will usually need to draw on experience to judge which key characteristics are likely to yield significant information.

Training may be by assessing samples which possess key characteristics and ranking the samples according to the predominant characteristic. They may then, if desired, be asked to make a fresh ranking according to a secondary characteristic. (See ISO 8587¹⁾.)

Testing to verify that they have memorized key characteristics can be carried out by a test such as the "A" or "not A" test (see ISO 8588²⁾). The original samples are presented again in random order, together with a sample which may or may not include the key characteristics; students are required to select the new sample.

5.4 Building up a thesaurus of descriptors

Trainees will need to understand the role of sensory descriptors as an aid to developing long-term sensory memory, and also as a means of communicating with clients and other experts.

It is necessary for them to acquire knowledge and command of the specific terminology used.

5.5 Identifying and establishing product standards by the trainee specialized expert assessor

In the training and testing of trainees and the monitoring of their performance, attention should be given

to developing their memory of the sensory properties of samples of products which conform to various quality standards (by describing the principal and supplementary characteristics of a product or a range of products) or which show differences in quality (possible defects or contamination of taste which may occur).

The differences in quality or the quality standards should be those recognized by traders, consumers and recognized experts as being significant in determining the commercial quality or acceptability of the product in question.

In certain cases, the relevant standards are clearly laid down (for instance, legal limits for the content of preservatives) but often they are unwritten and represent the consensus of informed opinion among experts.

In all cases, the trainee should learn to recognize samples of product which do not conform to the standards, or which show different degrees of conformity.

5.6 Recognition of evolutionary factors in the product

An expert assessor is usually required to judge a sample only according to its state at the time of assessment, but a specialized expert assessor may also be required to judge the circumstances that have led to the present state of a sample or to predict what its future state is likely to be.

Trainees should take every opportunity to sample products in different stages of evolution, to brief themselves on technical data which may relate to differences in quality (e.g. when a product shows signs of becoming rancid) or style, and to develop their judgement of the sensory factors which may be involved.

If comparable samples of a product at different stages of development can be assembled, trainees should learn to rank them by elapsed time and try to assess the relative pace of development. They may then have individual samples presented to them again, and be asked to judge from memory the position in the rank, and thus the stage of development that has been reached.

5.7 Assessment of marketing factors

Specialized expert assessors may often be required to judge commercial aspects of products, e.g. market value, faults and the characteristics of products sold by competitors. Trainees should be given opportu-

nities to assess products according to a variety of criteria, including ranking as a function of specific criteria of quality which can be determined by the demand of potential consumers, as well as cost factors.

5.8 Assessment conditions

The trainee needs to learn to assess large numbers of samples at a single occasion. The trainee also needs to learn to assess a wide range of samples of a product.

The trainee should learn to work under pressure (production time limits, competitions, auctions, etc.) and should take any opportunities available to evaluate his or her own performance under pressure and in adverse conditions compared with similar assessments in ideal circumstances.

The trainee should recognize that the change from the relative anonymity of group decisions to the responsibilities accepted by the expert may be a cause of pressure and may create a tendency to avoid definite assessments.

5.9 Training in reporting

5.9.1 Basis of the assessment

The basis of the assessment should be made clear in the report, with particular attention to the following questions which should be discussed during training.

- Was the assessment made as a group or individually? If it was made as a group, was the result arrived at by consensus?
- Is the reported result an independent, objective measurement of the characteristics of a product or products, or does it correspond to a measurement of quality based on known consumer tastes?
- Was the assessment conducted according to an agreed method? If so, which method?
- Was the present state of the product assessed or was its future development being predicted?

5.9.2 Summarizing

During training, it is often necessary to record in detail how a judgement is reached so that any errors or shortcomings in assessment may be identified and rectified. If these habits are carried forward into practical work, they may prove unhelpful or confusing.

Significant factors which may have been identified (as indicated in 5.3) should therefore be given particular

weight according to the chosen basis of assessment, if necessary by leaving out minor, though interesting, details. Any unusual weightings should, however, be individually noted in the report.

5.9.3 Method of reporting

5.9.3.1 Form of report

In its simplest form the report may be "Yes/No" or "Accept/Reject". At the other extreme, it might include technical assessment, quality scores, prediction of future development or marketing strategy.

5.9.3.2 Vocabulary

When a choice of words is possible, preference should be given to those which have been defined and accepted internationally (see ISO 5492).

When reporting to other members of the trade, technical or jargon phrases may be acceptable, but generally the simplest available words and phrases are to be preferred.

5.9.3.3 Style and presentation of reports

Tabulation and/or the use of a *pro-forma* layout may be helpful where a large quantity of data needs to be presented, or where a series of reports may need to be compared or contrasted. In cases where a logical sequence of conclusions needs to be drawn, a narrative style of report may be more appropriate.

At all times, care should be taken to ensure that the chosen pattern of report does not pre-judge the sensory analysis or introduce bias.

5.9.4 Statistical analysis

Trainees should acquire a basic knowledge of statistics sufficient to ensure that tests do not have in-built bias and that results are not misinterpreted (i.e. sampling, subjective effects, sample effects).

6 Monitoring and testing of performance

6.1 Trainees

Testing of the performance of trainees may be by continuous assessment and evaluation during their training sessions, or by a formal examination, or by a combination of both (see annex C for examples of training and formal examination in the wine trade). This will lead formally or informally to recognition as an expert assessor.

6.2 Expert assessors and specialized expert assessors

Short- and long-term changes may occur after training and it is essential that the performance of experts is continually monitored to check consistency. The crucial judgement is that of the market place, where it is decided whether or not a product meets the requirements of the final user. This judgement should be supplemented by comparing assessments with those of other experts.

The training of experts should result in an awareness of the need for checking in a continuous way the consistency of ability and of continual enhancement of skill and knowledge. The expert should take the initiative so that self-monitoring becomes an integral part of assessment.

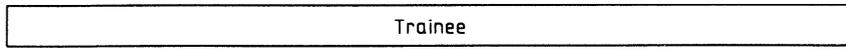
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Annex A
(informative)

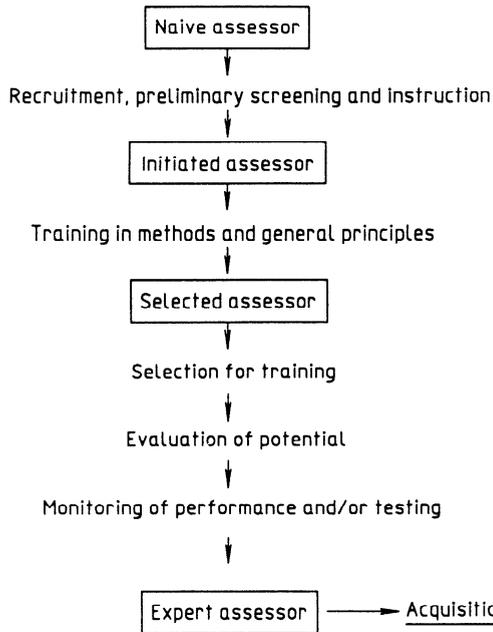
Diagram of stages by which a trainee may become an expert assessor or a specialized expert assessor

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A.1 Steps which allow a trainee to become an expert assessor, then a specialized expert assessor

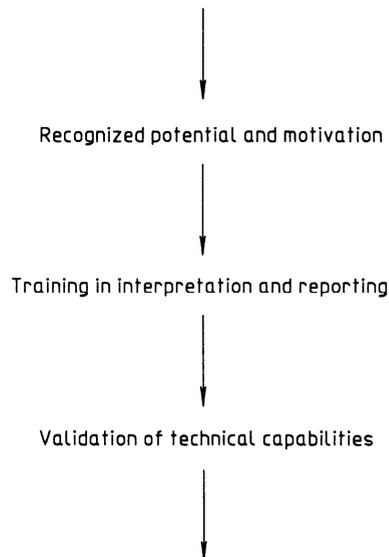


Acquisition of capabilities and experience in sensory analysis



→ Acquisition of capabilities and experience in a specialized field

Product and/or process and/or marketing training



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