EUROPEAN ACCREDITATION

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9 ***Publication Reference*** **EA-4/09 G 2021**

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# Accreditation For Sensory Testing Laboratories

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18 ***PURPOSE***

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20 This document supplements ISO/IEC 17025, and provides specific guidance on the
21 accreditation of sensory testing laboratories. It gives detailed guidance for the
22 interpretation of ISO/IEC 17025 for those undertaking sensory testing.
23 This document is intended to be used by user laboratories (accredited and non-
24 accredited), assessors involved in the evaluation of sensory laboratories and
25 accreditation bodies. It can also be useful for regulatory authorities, laboratory
26 customers and tests report users.

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*Authorship*

The publication has been prepared by a working Group of the Laboratory Committee.

*Official language*

The text may be translated into other languages as required. The English language version remains the definitive version.

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*Date of endorsement :*

*Date of implementation :* *date of endorsement + one year*

*Transitional period :* *-------*

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# 1 INTRODUCTION

1.1. The general requirements for accreditation are laid down in the International Standard General *requirements for the competence of testing and calibration laboratories* (ISO/IEC 17025). All these requirements must be met by laboratories seeking accreditation.

1.2. This document has been produced by the EA Laboratory Committee, Food Testing Task Force. This document provides specific guidance on the accreditation of sensory testing laboratories. It gives detailed guidance on the interpretation of ISO/IEC 17025 for those laboratories undertaking objective sensory methods.

1.3. ISO/IEC 17025 remains the authoritative document and, in cases of dispute, each individual accreditation body will adjudicate on unresolved matters.

1.4. Sensory analysis is a scientific discipline with a wide field of applications. In the food industry, it is currently a powerful and essential analytical tool, both in the development of new products and in the control of the quality of food as it is used to measure reactions to those characteristics of foods and other materials as are perceived by the senses of sight, smell, taste, touch and hearing. This definition embraces both qualitative and quantitative approaches and does not discriminate between the sensory attributes being assessed by consumers or trained sensory assessors.

1.5. Examples of the application of sensory analysis include:

shelf-life studies
product matching
product mapping
quality control for compliance with product specifications
product reformulation
taint and off odour/flavour problems
product quality
product grading

1.6. Specific requirements for hedonic tests are not included in this guide, although some of the requirements established are also applicable. Detailed guidance on hedonic tests can be found in [10].

1.7. This document is concerned with the quality of test results and is not specifically concerned with health and safety matters. However, laboratory practices should conform to national health and safety regulations. It is important to note that in some cases health and safety issues may influence on quality of testing and the laboratory will be required to take this into account.

1.8. For the purposes of this document, the terms and definitions given in [2] apply.

# 2 SCOPE OF ACCREDITATION

2.1 Accreditation bodies will only accredit laboratories for sensory tests that have been fully documented and shown to be under control by demonstrating that the laboratory will, within defined limits, obtain the same result, and where possible the laboratory should demonstrate equivalence results with other laboratories.

2.2 Examples of sensory tests that are used in sensory analysis and which can be accredited are:

| | |
|---|---|
| **Discriminative tests** | Triangle test<br>Paired comparison test<br>Duo-trio test<br>Ranking |
| **Descriptive tests** | Identification of perceived attributes (citation frequencies)<br>Quantification of the intensity of attributes using continuous or discontinuous rating scales |

The sensory test identification in the scope of accreditation shall clearly establish its nature and identify the sensory properties under analysis for which the panel of sensory assessors has been trained. In the case of methods that measure a quantitative response, information on the scale used should be included, such as the number of response levels.

Identification in the scope of accreditation of terms that do not allow sensory assessors to evaluate a sensory property by an objective and accurate sensory response, is not acceptable. This criterion ensures that the panel training can be addressed with valid references to the target sensory descriptors.

The inclusion in the scope of accreditation of sensory properties different from those already accredited in an already accredited sensory test, requires a new evaluation through a formal application for extension of the scope of accreditation.

2.3 It is the responsibility of the laboratory to demonstrate to the accreditation body assessors that meets all the criteria for accreditation. It is a difficult task when there are no standard methods, this being a frequent situation in sensory analysis with a few exceptions.

2.4 Therefore, this document is aimed at covering the main elements that need to be controlled to ensure compliance with the requirements of the EN ISO / IEC 17025 standard, specifically:

a) responsibilities, competence requirements and authorisation of staff carrying out the test;
b) selection, training and re-training of sensory assessors;
c) use of appropriate reference and training materials;
d) test procedure;
e) maintenance and calibration of equipment;
f) on-going quality control (QC) procedures;
g) on-going individual sensory assessor and panel performance monitoring;
h) the technical records necessary in relation to the performance of sensory tests and related activities.

2.5 Tests which are solely performed by only one individual will not be accredited as a sensory test.

# 3 PERSONNEL

**ISO/IEC 17025 clause 6.2**

## 3.1 Staff

3.1.1. Typically, the sensory laboratory staff is the panel leader and optionally there may be panel technicians (one or more).

The personnel who fulfil the scientific/technical functions of a sensory analysis laboratory is the panel leader.

The personnel who fulfil the operational functions by assisting the panel leader in performing sensory tests, including necessary preparation and identification of the samples before the test and activities after the test e.g. review of primary data and transcription for their treatment is the panel technician.

People who perform sensory evaluations of products are the sensory assessors. Usually, they are not included as staff because their primary function is not related to managing tests. Their role is described in paragraph 3.3.

The responsibilities and the competence requirements of all those involved in sensory testing should be documented.

The staff in a sensory laboratory shall be authorised by the management and records shall be maintained about their authorisation.

3.1.2. Competence, experience and training of the panel leader and technicians shall be recorded including:

a) academic qualifications
b) external and internal pertinent courses attended
c) previous experience

3.1.3. The laboratory shall maintain an up-to-date record of the training that all sensory assessors have received. The purpose of these records is to provide evidence that they have been adequately trained and that their competence to carry out

accredited tests has been assessed. The records shall be available when is required and shall also include relevant training jobs and re-training, as necessary.

Where a method or technique is not in regular use, the need to re-train sensory assessors periodically shall be considered. In each case the critical interval shall be established and documented.

3.1.4. Detailed guidance on staff responsibilities of sensory laboratories can be found in [4].

## 3.2 Panel leader

3.2.1 The responsibilities for panel leader position shall be formalised as written job description. Among them, the panel leader is responsible for organizing, planning and supervising the training works of sensory assessors and for monitoring them in routine analysis. Detailed information about the panel leader´s tasks can be found in [12], [13]

3.2.2 The laboratory shall define the minimum competence requirements included experience necessary for the panel leader. Sensory analysis must be carried out by a qualified and experienced panel leader possessing at least 2 years of experience in sensory analysis. In addition, the panel leader should have a university education in sensory science or be in possession of more specific education in sensory analysis and statistical analysis, and extensive knowledge of the sensory characteristics of the target products for sensory testing.

3.2.3 A special training is needed for panel leader besides sensory assessor training and should cover the intended sensory testing area, including at least:

a) selection of test procedures, experimental design and analysis;
b) product preparation and implementation of testing;
c) data input and processing;
d) reporting of results;
e) maintenance of records;
f) maintenance of all necessary supplies and services;
g) sensory assessor selection, training and monitoring procedures;
h) importance of the assessor's health and safety

More information is given in [5]

## 3.3. Sensory assessors

A sensory analysis panel is composed of people (sensory assessors) recruited from among the members of the laboratory, or from the organization to which it belongs or from external members and constitutes a true measuring instrument.

Sensory laboratories should have defined ethical principles of using human subjects. The principles should focus on personal safety and voluntariness of the assessors and confidentiality of all private information. Sensory assessors'

safety is of paramount importance and should have precedence over all other considerations.

The selection and training of sensory assessors needs to be carried out by experienced panel leader so that they can produce reliable results. The procedure must be documented.

The use of references materials shall be considered so that the sensory assessors can compare their results to the assigned values. When this is not possible, other references such as solutions of different concentrations of certain molecules responsible for the sensory properties of the product (both positive and negative) or any other option that the panel leader considers technically acceptable, shall be used to help the sensory evaluators in their training.

The results of the training, re-training, and monitoring processes should be evaluated by using statistical analysis tools, whenever possible.

Detailed guidance on selection and training of candidates intended to become sensory assessors can be found in [3], [7], [11], [13, Part II], [14].

### 3.3.1 Selection

It is very important to select the candidates in relation to the aim of the sensory test, in some cases it can be necessary to use experienced people in the target products, though they cannot demonstrate experience in sensory evaluation activities, for example in Protected Denomination de Origen (PDO) products; but in other cases, prior knowledge of the product can be a serious handicap for the panel to achieve objective results.

Consideration should be given to the personality (e.g. motivation, ability to concentrate), personal habits and availability of the candidates, because they could have a possible influence on the sensory test. The panel leader shall conduct personal interviews with all candidates.

The recognition and perception of odours and the basic tastes should be confirmed. Where relevant, colour vision, the detection of specific taints/odours and the person's ability to describe product characteristics should also be confirmed. The selection procedure should be established in a such way that ensures that the people with the best sensitivity and discriminatory skills can be chosen.

### 3.3.2 Basic training

The panel leader shall instruct sensory assessors to keep good practices before testing including not using any perfume and not eating and smoking at least one hour before testing.

Special consideration should be given to the safety of sensory assessors. In addition, dietary, health and ethical considerations of sensory assessors should be recorded and considered.

The areas covered shall include the use of the senses, familiarisation with the test procedure, and awareness of the effect of extraneous factors involved such as foods and perfumes.

Sensory assessors should be made aware about the types of products which may be involved in the sensory test.

If a candidate has enough specific education and experience in sensory analysis, he can be excused from the selection and basic training steps.

### 3.3.3 Specific training

The training programme must be documented to ensure that each sensory assessor or the panel as a whole (in the case of panel training) is adequately trained for the tasks to be carried out. The programme must define levels of competence and other relevant requirements which shall be attained before sensory assessors are permitted to take part in a sensory test.

Objective measures, for example repeatability, reproducibility, trueness, and discriminatory capacity should be used to assess the attainment of competence.

Comprehensive training records should be maintained for each member of the sensory analysis panel.

The ability to perform the test procedure should be confirmed. For example, this can be achieved by altering the concentration of a constituent in the sample and recording the results of the test, by the analysis of replicate samples or, for descriptive analysis, by testing using a range of a product type.

### 3.3.4 Monitoring

Individual performance of sensory assessors shall be monitored on a regular basis after training. Results, along with the date and product assessed, should become a part of the individual performance record. To help with this, the record system should be easily accessible.

Results should also be monitored to investigate for any fatigue effect. If noted, the number of samples/session or sessions/day should be reduced and recorded.

Guidelines for periodic monitoring the performance of each sensory assessor can be found in [6].

3.3.5 Re-training

Procedures and criteria shall exist for re-training if a sensory assessor has not performed a test for a defined period, or if his/her results fall outside acceptable limits.

In both situations, the sensory assessor shall not be included in the panel until re-training is completed and the results demonstrate that they have regained the competence required to participate in the sensory test.

The laboratory shall have a practice and documentation of expulsion (removing) a sensory assessor if he/she would not re-qualify for the panel.

3.3.6 Health factors

Health and related factors that might affect the performance of the sensory assessors should be recorded and consideration given to removing the sensory assessor from the test. Factors might include allergic reactions, colds, upset stomachs, toothache, pregnancy, certain medications and psychological stress.

At all times, sensory assessors should report to panel leader any ill effects they suffer.

# 4 FACILITIES AND ENVIRONMENT CONDITIONS

**ISO/IEC 17025 clause 6.3**

4.1. Environmental conditions are particularly important in sensory work as they influence the results. The laboratory should provide appropriate environmental conditions and controls necessary for the test being carried out. The testing must be performed in a specific area dedicated for the purpose. Normally, the sensory facility shall be a quiet area free from distractions and with controlled lighting, partitions between subjects to minimise visual contact, neutral colours for the walls, odour-free surfaces and appropriate ventilation. In addition, a separate area for sample preparation should be provided. The test rooms for sensory analysis shall be designed as described in [8].

4.2. The laboratory should be aware of the importance of good housekeeping and the cleanliness of the test and preparation areas. If the sample preparation area is not situated near the testing area, attention must be given to the transportation of the samples and the maintenance of the correct serving temperature. The access of sensory assessors to the preparation area should be controlled to avoid the analysis being influenced by visual clues. This is particularly important when the samples are being laid out prior to analysis.

4.3. Environmental conditions required for the analysis should be documented and where they are critical for performing the test they shall be monitored, controlled and recorded appropriately. For example, in temperature-controlled areas a maximum-minimum thermometer or a recording thermometer should be used to demonstrate effective control. These temperature measuring devices should

be included in the laboratory calibration programme and the calibration should be traceable to national or international standards via an approved route.

4.4. For tests involving samples not at ambient room temperature, facilities must be available to bring the sample to the correct and homogenous temperature and to maintain it for the required length of time. Records that demonstrate the fulfilment of this requirement should be maintained.

# 5 EQUIPMENT

**ISO/IEC 17025 clause 6.4**

5.1 Regular maintenance and performance checks should be carried out to ensure that equipment meets the required performance specifications. The importance of good housekeeping with respect to equipment is emphasised. Attention should be paid to the possibility of contamination arising from the equipment or cross-contamination from previous use. Equipment that is not directly used in analysis or examination, for example washing machines and water purifiers, should be subject to an appropriate programme of maintenance and cleanliness. Records of maintenance should be kept.

5.2 Equipment normally found in the sensory laboratory can be categorised as:

a) *Sample preparation and storage equipment (eg ovens, hobs, microwave ovens, refrigerators, cold stores, freezers, food processors, knives, cutting devices)*

Typically, equipment will be maintained only by cleaning and conducting safety checks, as necessary. Performance checks will be necessary where the setting can significantly affect the test result.

b) *Measuring instruments and equipment (thermometers, timers, balances, flasks, devices for maintaining a specified temperature of the sample, etc.)*

Correct use, combined with periodic servicing, cleaning, and, where appropriate, calibration will be necessary.

c) *Sample serving equipment*

The form this equipment takes is dictated by the samples and the test method. In some products (e.g. wine, virgin olive oils) specific testing devices are required. All containers must be identical in any one sensory analysis session. Glass or pottery utensils must be cleaned thoroughly before use and kept solely for the purpose of sensory analysis. Where plastic cups and utensils are used, it should be checked that they will not impart a taint. The use of marker pens which give off a strong odour are to be avoided when coding the sample containers.

# 6 TRACEABILITY: REFERENCES

**ISO/IEC 17025 clause 6.5.3**

6.1 Whenever possible, appropriate references for each sensory property shall be used in training and monitoring the performance of sensory assessors and in quality control of sensory methods. Furthermore, as far as possible, its use should allow the comparison of panels that apply the same sensory methods.

For many types of sensorial methods can be used references prepared within the laboratory from chemical compound (e.g. molecules responsible for sensory properties) of known purity and composition; in other methods it may be necessary to use samples to which substances are added to bring about particular qualities, defects or positive attributes. The selection of internal reference samples by the panel leader may also be necessary. The laboratory shall establish a documented procedure for preparation of those in-house reference materials. The laboratory shall establish acceptance criteria for such materials and shall document the compliance of the material to those criteria.

The availability of Certified Reference Materials is still very limited; on the other hand, it is possible to use, when they exist, samples from interlaboratory tests, although the laboratory shall assign a value based on the information available. This type of material is very suitable for quality control of sensory methods.

6.2 References shall be labelled clearly so that they are identified unambiguously. Information should be available to indicate preparation, shelf life, storage conditions, applicability and restrictions of use. All containers should be adequately labelled to indicate identity, concentration, date of preparation and/or expiry date.

Reference materials and standards should be handled in such a way as to safeguard against contamination.

Personnel responsible for preparation and handling should be identifiable from records.

# 7 SELECTION AND VALIDATION OF METHODS

**ISO/IEC 17025 clause 7.2**

7.1 Whenever possible, a laboratory shall use methods and procedures that are up to date and established as standard or by reputable technical organizations or by recognized scientific journals. When such methods are not available for sensory analysis, laboratory-developed methods should be used and these methods shall be properly documented and validated (ISO/IEC 17025, 7.2.2.1)

Detailed guidance on the selection of appropriated methods to verify the compliance of PDO food products with sensory requirements according EU regulation, can be found in [14]

7.2 Methods for sensory tests shall be documented and the following aspects at minimum shall be included:

a) Sensory definitions of the selected sensory properties
b) Order of evaluation of the sensory properties
c) Instructions for sample preparation and serving conditions such as temperature
d) Order of presentation of the samples to the sensory assessors, minimizing physiological and psychological biases
e) Managing of testing session (usually a session is composed by one series of samples), waiting time among series of samples, steps between samples and maximum number of samples per day
f) Minimum number required of sensory assessors to participate in a session; minimum number recommended is eight
g) Environmental conditions of the test room (e.g. temperature, light)
h) Equipment and materials (e.g. glasses, heaters, products for the elimination of taste and flavour between samples)
i) Methods for statistical analysis of results
j) Results and other information to be included in test reports (e.g. statements of conformity)

7.3 The tasting techniques for evaluating samples shall be documented and available for sensory assessors during the evaluation sessions to assure that all of them evaluate the samples in the same way.

7.4 The sensory assessors' responses shall be recorded on a sensory evaluation sheet which will be a relevant technical record.

The evaluation sheet can only contain the necessary information related to the sensory descriptors to be evaluated (for which the sensory assessors have been trained) Therefore, it cannot:

- Include meanings or names of the response levels on the scales that induce the sensory assessors to evaluate subjectively.
- Include information that influences the sensory assessors, for example in such a way that they can only assign certain sensory responses.
- Include any information from the evaluated sample that may influence the sensory assessors or induce subjectivity in their evaluations.
- Incorporate the realization of calculations by the sensory assessors during the sensory evaluation. The calculations are made from the result of the sensory evaluation but not as part of it.

7.5 Where appropriate, effects such as sensory assessor fatigue, session fatigue and sensory assessor comfort should be addressed by careful attention to experimental design, a balanced presentation of samples and, where necessary, allowing sufficient time between tests.

7.6 Validation of laboratory-developed methods is required to demonstrate that they are suitable for their intended purpose. It shall be carried out considering the panel as a whole and at least with the minimum number of sensory assessors established. Validation should be carried out through panel sessions conducted specifically for the purpose of obtaining performance data or using data already available.

The validation procedure shall consider the performance characteristics of the panel as a whole: repeatability, reproducibility, consistency of sensory assessors' responses and discriminating ability. Definitions are given in [6]

The validation procedure shall include, at least:

a) Experimental design (number of sensory assessors, samples, replicates and sessions)
b) Samples used (for example, in terms of identification or quantification of attributes for food quality control, the selected samples should be both appropriate and non-appropriate products)
c) Methods for statistical analysis of results

Validation results shall be recorded in a validation report, including the analysis to determine the above-mentioned performance characteristic of the method, and should allow to establish criteria for the quality control of the method.

Guidelines for monitoring the performance of a panel can be found in [6]

# 8 HANDLING OF SENSORY TEST ITEMS

**ISO/IEC 17025, clause 7.4**

8.1 Sample packaging, and instruments used for sample manipulation, should be selected so that no surface in contact with the sample will impart any taint or introduce any microbiological or chemical hazard. The seal of the sample package should be adequate to prevent leakage of the sample from the container and prevent contamination.

8.2 The sample label is important and should unambiguously identify the sample to related plans and sample register. Further into the analytical process, labelling becomes particularly important as the sample may have been divided and sub-sampled. At that stage, additional information such as references to the main sample and to any processes used to take the sub-sample, may be appropriate. Labelling should be firmly attached to the sample packaging and where appropriate, be resistant to fading, sample spillage, and reasonable extremes of temperature and humidity.

8.3 Samples should be stored so that the integrity of the samples is preserved. Storage areas should be kept clean and organised. Extremes of environmental conditions, which might change the sensory attributes of the samples, should be avoided. If necessary, environmental monitoring should be used. An appropriate level of security should be exercised to restrict unauthorised access

to the samples. The samples will be labelled objectively and neutrally (for example: by random numbers).

8.4 Food samples submitted for analysis may often require special storage conditions such as refrigeration or freezing. In such cases, laboratories should store samples under appropriate conditions and maintain, monitor and record such conditions in order to demonstrate that specific requirements are being met.

8.5 It is of paramount importance to develop written procedures that include all the details of sample preparation (cutting, unfreezing, toasting, boiling, cooking, roasting etc, when used). These descriptions should be as comprehensive as possible to ensure that any sample will be treated always in the same way, which will improve the repeatability of results. For example, when boiling potatoes: amount of water, salt, time of cooking, average size of potatoes, etc. should be described.

8.6 When appropriate, the laboratory should establish procedures for handling and preparing any new sample types.

8.7 The laboratory should have a documented policy for the retention and disposal of samples after testing.

# 9 TECHNICAL RECORDS

**ISO/IEC 17025 clause 7.5**

9.1 Technical records for each test shall include all the information needed to ensure that any test could be repeated in conditions as near as possible to the original test.

9.2 In sensory analysis, the following information are especially important and shall be recorded:

a) Evaluation sheets fulfilled by the sensory assessors during the sessions for each sample evaluated including date, time, assessor´s code and position, sample identification code, sensory responses and assessor's signature or equivalent mark
b) In each session, the order of presentation of each sample to each sensory assessor
c) Preparation and coding of samples, equipment used and personnel who carry it out
d) Environmental conditions from the taste room and from the sample preparation area
e) Where applicable, conditions (e.g. temperature) of samples or controls performed to verify them
f) Supervision performed by the panel leader
g) Statistical analysis of sensory responses performed by the panel leader
h) Calculations
i) Quality control evaluation performed by the panel leader

# 10 UNCERTAINTY OF MEASUREMENT

**ISO/IEC 17025 clause 7.6**

Sensory tests come into the category of those that a strategy on evaluation of measurement uncertainty need to be developed by the scientific community.

In some cases, when a quantitative testing is considered, it can be sufficient to report only the reproducibility.

Guidance on the implementation of uncertainty evaluation in testing can be found in [15]

# 11 QUALITY CONTROL

**ISO/IEC 17025, clause 7.7**

## 11.1. Internal quality control

11.1 The laboratory shall apply appropriate procedures for monitoring the performance of the panel (as a whole) and to demonstrate the validity of its results.

11.2 The ways in which internal quality control should be carried out include:

a) Replicate analysis of samples for checking panel repeatability; the recommended frequency is each tasting day; this control shall be used for monitoring the panel as a whole and individual sensory assessors too.
b) Analysis of references (e.g. samples from interlaboratory, internal samples selected by panel leader, other characterised materials); the recommended frequency is each month; this control could be used for: monitoring the reproducibility, and trueness (when possible) of the panel; evaluating its discriminating ability and also monitoring individual assessors (e.g. individual deviation from panel results)
c) All the results of the panel for each sample shall be checked for consistency of sensory assessors' responses.

11.3 The references and samples used for quality control should be representatives to cover over a year different type of samples and all sensory properties evaluated.

11.4 The controls indicated at 11.2 can be used for monitoring individual sensory assessors.

### 11.2. External quality assessment (proficiency testing)

If available, laboratories shall participate in proficiency testing which are relevant to their scope of accreditation, preference should be given to proficiency testing schemes which use appropriate matrices.

# 12 REPORTING OF RESULTS

**ISO/IEC 17025, clause 7.8**

12.1 The report shall adequately describe the results of all sensory properties of the sample assessed by the panel.

12.2 The sensory report shall be authorized by the panel leader.

12.3 The information relating to the sensory evaluation of the sample shall be included in the sensory analysis report, noting in particular the description of the sample, the sensory method and the statement of conformity when it is requested.

12.4 In relation to the statement of conformity of the reported results, it shall be carried out by the panel leader and it consists of evaluating the results of the sensory analysis against the specifications or organoleptic requirements (e.g., from an EU PDO product).

It is necessary that the laboratory sets documentary evaluation criteria used to declare conformity or non-conformity with the aforementioned requirements. In the test report, together with the declaration of conformity, the appropriate identification of the specifications and the document containing the evaluation criteria, must be also identified (for example, indicating its revision status and /or date of approval). The document containing the evaluation criteria should be approved (e.g. by the PDO “Control body”) or published by the competent authority

# 13 NONCONFORMING WORK

**ISO/IEC 17025, clause 7.10**

13.1 The panel leader shall apply its nonconforming work procedure when the results of the continuous monitoring activities of the sensory assessors or the panel do not fulfil the previously established criteria.

13.2 Examples of nonconforming works in panel monitoring are:

- If the established criteria for panel repeatability are not fulfilled (for example, a high percentage of the total evaluated sensory descriptors is not repeatable), the panel leader should take a decision on the acceptability of

the samples results, as it is not demonstrated that the panel has performed in a repeatable way.

- If the established criteria for panel consistency of sensory assessors' responses (for example, maximum acceptable difference between the response of each sensory evaluator vs. the result of the panel as a whole) is not fulfilled for each sensory property evaluated in each sample evaluated or, at least, for a minimum percentage of evaluated sensory descriptors in the sample, the panel leader must cancel the sample and it shall be evaluated in another session before reporting its results.
- If a sensory assessor does not fulfil the established criteria for individual monitoring, the panel leader should decide whether it is necessary for him to lose his qualification, temporarily leave the panel and re-train before deciding to re-enter the panel again.

# APPENDIX A REFERENCES


[1] ISO/IEC 17025 *General requirements for the competence of testing and calibration laboratories.*

[2] ISO 5492 *Sensory Analysis. Vocabulary.*

[3] ISO 8586 *Sensory Analysis. General guidelines for the selection, training and monitoring of selected assessors and expert sensory assessors.*

[4] ISO 13300-1 *Sensory analysis. General guidance for the staff of a sensory evaluation laboratory. Part 1: Staff responsibilities.*

[5] ISO 13300-2 *Sensory analysis. General guidance for the staff of a sensory evaluation laboratory. Part 2: Recruitment and training of panel leaders.*

[6] ISO 11132 *Sensory analysis. Methodology. Guidelines for monitoring the performance of a quantitative sensory panel.*

[7] ISO 5496 *Sensory analysis. Methodology. Initiation and training of assessors in the detection and recognition of odours.*

[8] ISO 8589 *Sensory analysis. General guidance for the design of test rooms.*

[9] ISO 4121 *Sensory analysis. Guidelines for the use of quantitative response scales*

[10] ISO 11136 *Sensory analysis. Methodology. General guidance for conducting hedonic tests with consumers in a controlled area.*

[11] COI/T.20/Doc. Nº 14 *Guide for the selection, training and quality control of virgin olive oil tasters-qualifications of tasters, panel leaders and trainers.*

[12] COI/T.28/Doc. Nº 1 *Guidelines for the accomplishment of requirements of standard iso 17025 of sensory testing laboratories with particular reference to virgin olive oil*

[13] OIV *Review document on sensory analysis of wine*

[14] E3S *Guideline for sensory analysis of PDO food products and wines (to be published soon)*

[15] ILAC-G17:01 *Guidelines for Measurement Uncertainty in Testing*