
**Sensory analysis — General guidance for
the staff of a sensory evaluation
laboratory —**

Part 2:
Recruitment and training of panel leaders

*Analyse sensorielle — Guide général à l'attention du personnel des
laboratoires d'analyse sensorielle —*

Partie 2: Recrutement et formation des animateurs de jury

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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.

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The main task of technical committees is to prepare International Standards. 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.

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.

ISO 13300-2 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 12, *Sensory analysis*.

ISO 13300 consists of the following parts, under the general title *Sensory analysis — General guidance for the staff of a sensory evaluation laboratory*:

- *Part 1: Staff responsibilities*
- *Part 2: Recruitment and training of panel leaders*

Sensory analysis — General guidance for the staff of a sensory evaluation laboratory —

Part 2: Recruitment and training of panel leaders

1 Scope

This part of ISO 13300 gives guidelines for the recruitment and training of panel leaders. In addition, it describes the principal activities and responsibilities of a panel leader for sensory analysis.

2 Normative references

The following referenced documents are indispensable for the application 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, *Sensory analysis — Vocabulary*

ISO 13300-1, *Sensory analysis — General guidance for the staff of a sensory evaluation laboratory — Part 1: Staff responsibilities*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5492 and ISO 13300-1 and the following apply.

3.1

panel leader

person whose primary duties are to manage panel activities, and recruit, train and monitor the assessors

NOTE 1 This person may also design and conduct sensory tests, and analyse and interpret data.

NOTE 2 This person may be assisted by one or more panel technicians.

3.2

sensory analyst

person who fulfils scientific professional functions, who may supervise one or more panel leaders, design and conduct sensory studies, and who analyses and interprets the resulting data

3.3

sensory project

organized study, usually in an industrial or academic setting, consisting of a series of steps, for example agreeing on a project objective with the test requestor, preparing a set of samples, conducting a number of sensory tests, analysing the data, and formulating a conclusion

4 Principle

A person is recruited for the position of panel leader and is trained to develop knowledge, skills and abilities to be able to select, train, maintain and operate a sensory panel and to evaluate and report its findings. The candidate should have experience or knowledge of sensory test methodology and statistics.

A college degree in an associated area such as psychology, psychophysics, a product science (e.g. food technology, food science), chemistry and biology may be helpful and provides some assurance that the individual understands basic scientific principles.

5 Responsibilities and functions of a panel leader

The general responsibilities of a panel leader are

- training and orientation of assessors,
- panel maintenance, and
- execution of tests.

A detailed description of the activities is covered in Clause 9.

6 Required qualifications

6.1 Sensory methodology

A panel leader needs basic knowledge in sensory evaluation principles to facilitate his/her job as panel leader. If the panel leader lacks this knowledge, training should start with a course in basic sensory evaluation.

6.2 Leadership and personality

Candidates are leaders. They should be confident, friendly, capable of maintaining authority and control of the group, and command respect. They should have the ability to lead discussions, meet session objectives and complete session activities in a timely and effective manner. Furthermore, they should be able to anticipate and meet the needs of each panel member and the panel as a whole, technically and psychologically.

The panel leader should be able to inspire the assessors, keep them motivated, and tactfully solve problems within the panel. For the panel to be effective, the panel leader needs to be patient, fair, honest, and non-judgmental.

6.3 Group dynamic skills

The ability to lead and interact with the assessors is important. As such, candidates should have experience or gain experience in leading groups and understanding group interactions. The panel leader should be able to guide, motivate and maintain control of the panel in a manner that ensures that the panel arrives at sound, adequate conclusions that address the project objectives. The panel leader should give appropriate attention to all assessors and should ensure that no assessor overshadows others or is too reticent. The panel leader should also be able to resolve conflicts among the assessors without alienating any individual assessors.

6.4 Communication skills

The panel leader is the primary link between the test requestor and the assessors and should be able to explain information to both technical and non-technical individuals. The panel leader should be able to explain the panel's capabilities to management and new clients. This requires clear, concise writing and speaking skills. Listening and speaking skills are equally important in communicating with assessors.

6.5 Analytical thinking

Analytical thinking is an important requirement for a good panel leader. The panel leader should be able to interpret the assessor's comments or responses suitably and concisely. When appropriate, the leader should convey these in data analysis and interpretation of results, and in making conclusions and recommendations.

6.6 Organizational skills

Good organizational skills are essential for

- training assessors,
- collecting, preparing and presenting products,
- conducting panel evaluations,
- compiling, analysing and interpreting data,
- writing reports,
- meeting established time frames, and
- planning multiple priorities.

The panel leader needs to be detail-oriented during the training of the assessors and when conducting panel sessions.

7 Recruitment of a panel leader

7.1 Recruiting an experienced panel leader

Ideally, an institution or company seeking a panel leader should recruit an experienced panel leader.

NOTE The primary advantage is that an experienced panel leader is familiar with all phases of panel testing and does not require training other than that necessary to understand new product categories. In addition, an experienced panel leader is able to train or administer, or both, an existing panel when hired.

In organizations where a sensory analyst serves in the role of panel leader, or where the panel leader takes on tasks of a sensory analyst (such as data analysis and reporting), recruiting should take into account the dual roles the person will perform.

7.2 Recruiting an inexperienced panel leader

Primary sources for panel leaders are the company's sensory group or new graduates of educational programmes. An employee from the company's sensory group is not only familiar with the sensory characteristics of the company's products but also should be knowledgeable about the company's sensory procedures. College graduates with sound technical skills in sensory analysis should be used whenever the panel leader is also performing some or all of the duties of a sensory analyst.

Panel members may also be recruited to be panel leaders. A panel member has experience from panel training and familiarity with the routine and the group dynamics of the panel. The individual will need to be taught basic sensory methods as well as company procedures. Close supervision by a sensory analyst is required.

8 Training to become panel leader

8.1 Form of training

8.1.1 General

Two methods may be used to train a panel leader: an experienced panel leader does the training, or the new panel leader learns through personal experience and short courses while working in a sensory department (i.e. on-the-job training). A brief description of these two methods is given in 8.1.2 and 8.1.3. The skills and knowledge to be acquired through these two methods of training are discussed in Clause 6. Where the role of sensory analyst and panel leader are carried out by the same individual, training should be provided for both positions (see ISO 13300-1).

8.1.2 Training by experienced panel leader

Candidates for panel leaders demonstrating the fundamental qualifications (see Clause 6) may be trained by an experienced panel leader who is either working with the organization or who has been hired on a contractual consulting basis. It is recommended to interact with a knowledgeable professional. When specific methodology is used, special care should be given in the selection of an experienced panel leader/consultant (hereafter referred to as “experienced leader”) with expertise in the methodology to be implemented.

The candidate is first trained in basic sensory methodology by the experienced leader, or by attending introductory sensory course(s), or both. It is recommended that the candidate also has access to texts, guides and journals on sensory test design and methodologies, data analysis, and reporting guidelines as additional resources.

After learning the basics of the methodology to be used, the candidate is trained by the experienced panel leader through either

- a panel training programme where the candidate is trained to develop skills as a panel leader and for descriptive panels as a selected assessor, or
- one-on-one training sessions.

Typically, the candidate leads the panel sessions, reports on group and individual assessor's progress to the experienced leader, and refers questions to the experienced leader for help. The experienced leader may offer suggestions on resolving conflicts among assessors, suggest training to help illustrate a critical concept, offer advice on dealing with specific assessors or assessor types, and provide support, encouragement and direction as the candidate gains experience and confidence.

The candidate learns to plan panel sessions, organize sample preparation, set up test controls, evaluate assessors' performance, conduct basic analysis and data interpretation, and how to report test results. The experienced leader continues to monitor the progress of the candidate and the group until sensory skills and interactive patterns are well developed.

The candidate should be encouraged to establish a personal network of experienced panel leaders and sensory professionals via organizations, affiliates or professional organizations, as there is a vast pool of experience and information that can be shared among practicing panel leaders.

8.1.3 On-the-job training

8.1.3.1 General

In some cases, a candidate may only become an experienced professional in this area by practice obtained on the job, interaction with an existing panel, and gathering information from other sources, such as short courses or workshops.

8.1.3.2 Interaction with an existing panel

Inexperienced panel leaders hired to manage an existing panel (such as a descriptive panel) learn valuable information from the panel and the panel interactions. The new panel leader needs to have an amicable personality and the ability to project authority while learning from the assessors and acknowledging their experience.

Interacting with an existing panel allows the new panel leader to learn the processes used in the organization's panels, describing and quantifying sensory properties, evaluating samples, becoming familiar with reference samples, and obtaining experience in moderating or working with a group. The new panel leader begins by observing the process and dynamics and gradually takes a leadership role with the panel.

These skills should be supplemented by study and practical experience (see 8.1.3.3).

8.1.3.3 Study and practical experience

Necessary skills may be learned through study.

Study and practical experience should include the following:

- a) understanding the sensory fundamentals involved in the test type;
- b) participating in a group dynamics course, or involvement with social groups to develop these skills;
- c) attending courses and technical meetings that focus on sensory methodology and panel leadership;
- d) visiting panels and panel leaders in other facilities (universities or other divisions of the company), when possible;
- e) reading technical journals and books.

8.2 Acquisition of basic knowledge

8.2.1 General

The background knowledge needed by a panel leader can be divided into the knowledge of sensory methodology and knowledge about sensory properties.

8.2.2 Basic sensory methodology

A panel leader needs to have a good understanding of the principal sensory methods and test controls. Knowledge of sensory methods allows the panel leader to better design tests, interpret data in the context of the completed project, and request or design other sensory tests needed to complete a project.

As a minimum, a panel leader

- needs to be familiar with the characteristics and applications of discrimination tests (difference and similarity), descriptive tests and consumer tests (quantitative and qualitative); the panel leader should be very familiar with principles, procedures and issues associated with the specific type of panels that is to be led;
- needs to understand the impact of test controls (including environment, equipment, sample storage, preparation and serving) on the integrity of products and their evaluation.

8.2.3 Sensory properties

It is essential that the panel leader understand the sensory properties of the product to be evaluated in order to plan studies effectively and efficiently. Perceptual issues (e.g. carry-over and context) that are dependent on sensory properties need to be understood in order to plan and conduct all types of panels.

8.3 Development of personal skills

8.3.1 General

Several skills are necessary to successfully design and conduct panel sessions. These skills are mainly related to the planning and organization of panel sessions and the management of group dynamics that occur in group sessions. Ideally, a panel leader candidate should have these skills (see Clause 6).

8.3.2 Training in practical organization of panel activities

Thorough planning and organization of panel activities are necessary because of the variety, amount and complexity of the tasks to be completed in a panel session.

The best way to develop organizational skills is to work with an experienced panel leader. This person offers specific directions to the candidate on how to organize and execute a test, or he/she may conduct a project so that the candidate observes and learns.

If an experienced panel leader is not available, a candidate needs to outline all activities to be performed, develop a timetable, and conduct all activities based on the developed plan. Adjustments should be made as necessary and, most importantly, notations should be made and used for the planning and execution of the next steps.

8.3.3 Training in the managing of group dynamics

A variety of personal skills is required to successfully manage a group and the dynamics that arise in a group situation (see Clause 6). These may be developed either through reading and practical experience or attending courses.

An inexperienced panel leader still needs to apply the concepts in a practical way and work with a panel, monitoring the interaction and the dynamics of these groups.

8.4 Additional training

Sometimes, panel leaders have other responsibilities in addition to the design and administration of panel sessions. These may include data capture, analysis and interpretation, and report writing. In cases where the panel leader has some or all the responsibilities of a sensory analyst, considerable additional training is necessary in areas associated with those tasks. Panel leaders also need training in food hygiene, ethics and safety.

9 Considerations for panel leaders who will be training descriptive panels

9.1 General

Many panel leaders are responsible for training sensory descriptive panels. This activity involves selecting the appropriate methodology, recruiting assessors, administering the preparation of all training sessions, conducting the training, monitoring panel performance throughout training, and initiating the use of the panel once the training is completed.

9.2 Training descriptive sensory assessors

9.2.1 General

A panel leader may be responsible for training panels on a regular basis. The panel leader may be involved in training a variety of panels, including general panels (i.e. a panel evaluating all types of flavours, fragrances, tactile properties, etc.), product-specific panels (i.e. a panel evaluating sensory attributes in one or a few product categories), or panels for specific functions.

In order to complete all phases of the training, a panel leader should have a considerable amount of experience in descriptive analysis and product evaluation. Alternatively, a panel leader may work with the support of an experienced panel leader or professional (e.g. experienced professional within the organization, or outside consultant) to complete all phases of assessor training.

Other qualifications are important and are discussed in Clause 6.

A panel leader's main activities during panel training are discussed in 9.2.2 to 9.2.4.

9.2.2 Selection of methodology to train assessors

An experienced panel leader should select or design the most appropriate method/approach to complete the panel training. Considerations for the selection or design include

- selecting an appropriate descriptive analysis method, and
- determining the type of training to be conducted [some panels are trained to evaluate all perceivable attributes and their intensities, while other panels (e.g. quality control) evaluate a reduced set of attributes].

9.2.3 Panel recruitment

A panel leader may recruit new assessors from time to time and should select the most appropriate method for recruitment. Considerations include

- determining the most appropriate method to advertise and screen potential assessors, and
- selecting screening procedures that help in selecting assessors with the right skills and ability to make a commitment to the programme.

9.2.4 Training new assessors

A panel leader occasionally needs to train new assessors and merge them with the existing panel in case of severe attrition. The panel leader should train a pre-screened group of 5 to 8 individuals at one time. Throughout this training, the panel leader should foster interaction between both panels to facilitate their merger at a future date. Each trainee should pass a performance evaluation before joining the current panel. For the performance evaluation, a set of products that includes duplicate samples should be evaluated by both the trainees and the current selected assessors, and a specified level of performance must be achieved to complete the training.

9.3 Panel maintenance

9.3.1 Panel monitoring

A panel leader should maintain records of assessors' performance and monitor them to ensure that the desired level of performance (e.g. consistency among and between assessors) is maintained.

If performance falls below the required standard, the panel leader should decide on remedial action. This may relate to individual assessors, to evaluation procedures or to the attributes assessed.

9.3.2 Panel discussion

After a set of samples has been evaluated, the panel leader should monitor a discussion to determine inconsistent use of terminology, identify “difficult” attributes requiring further training, and identify assessors perceiving samples/attributes not consistent with the rest of the group.

9.3.3 Data review

A panel leader should produce graphs, and summarize and analyse the panel data to monitor their performance. Through a review of panel data, a panel leader can identify high variability of scores, outliers (extremely low or high scores), and product/assessor interactions.

9.3.4 Panel calibration

A panel leader should conduct orientation sessions on a routine basis to calibrate selected assessors. These sessions should cover the following:

- a) discussion of terminology: the discussion focuses on attributes that show high variability among assessors;
- b) presentation of reference standards: reference standards may be reviewed to clarify terminology or establish product references or anchors for evaluations;
- c) discussion of product presentation and evaluation techniques;
- d) product evaluation using modified terminology or new reference standards;
- e) discussion of product-evaluation results.

9.4 Execution of a descriptive project

9.4.1 General

The principal responsibility of the panel leader is to ensure the execution of the descriptive test or project. The steps required for successful completion include interaction with the test requestor or client, planning of orientation sessions, conducting the orientation sessions, choosing the correct experimental design, execution of the test, data analysis, and interpretation and issuing of the final report.

9.4.2 Test design

The panel leader should assist in providing various types of information needed for planning a test, which may include

- the number and nature of the samples,
- the number of replications,
- the number and nature of the assessors,
- the amounts of sample needed,
- test designs,
- the number of orientation sessions needed,
- the time to conduct the test, and
- data-collection procedures, data entry and data handling.

A plan for the preparation and presentation of samples should be developed before the test. The panel leader should work with the technician responsible for preparing samples to ensure that samples are prepared in accordance with standard procedures and are presented in the order corresponding to the experimental design.

9.4.3 Test environment

The panel leader should ensure that the test environment is adequate for the sample evaluation.

9.4.4 Sample supply

The panel leader should ensure that there is a sufficient amount of test sample needed for the project.

9.4.5 Planning the orientation session

9.4.5.1 General

A primary responsibility of a descriptive panel leader is to conduct the orientation of the panel. The objectives of orientation sessions are

- to enhance the assessors' ability to recognize, identify, define and reference the sensory attributes of the test products through broad-based product sampling and repetition,
- to standardize protocols, and
- to practice the specific test method(s) to be used.

9.4.5.2 Conducting an orientation session

The panel leader should conduct practice sessions until there is evidence that the panel is able to reproduce precise, consistent results. A round table format often works best at this point, lending itself to meaningful interaction between assessors.

During orientation, the panel leader should complete the following activities:

- a) present a range of test products to provide maximum exposure to the product category and facilitate the identification of the product attributes;
- b) assist in identifying attributes specific to the test samples;
- c) provide reference samples to give a point of common reference for a specific characteristic and/or intensity in a study;
- d) assist in establishing specific and uniform techniques for measuring each attribute, including such aspects as size of bite, position of product in the mouth, number of chews, amount and position of sample application and distance from subject for a spray; protocols are important in order to minimize the effect of non-test variables that may distort data;
- e) establish a ballot protocol that may include deciding, for fixed ballots, which attributes are to be evaluated, on what response scale, in which order, with directions for testing, where appropriate;
- f) test the protocols for appropriateness in practice sessions and make modifications as needed.

9.4.6 Execution of the test

During the actual execution of the test, the panel leader should ensure that the protocol is followed, assessor questions are answered, references are available, and data are collected. After sample evaluation, the panel leader should lead a panel discussion, if necessary.

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