

The sound of food being prepared, cooked, served, and eaten influences food preferences and our perception of freshness, as exemplified by the crisp, crunchy sound of an apple. Food texture, felt by the fingertips, tongue, teeth, and palate, is known as mouthfeel. Sensory testing requires careful control to measure true product differences. The physical setting should minimize subject biases, maximize their sensitivity, and eliminate extraneous variables.

**Introduction** Everyone has different taste perceptions, so tasters should understand that there's no "right" answer. During tasting sessions, tasters should refrain from talking, sharing ideas, or looking at each other's expressions. Industry uses tasting booths to prevent these distractions.

**Test Room Design**

- \* A circular table is used for consensus-type descriptive analysis, round-table discussion for descriptive analysis ballot development, and training or other descriptive tasks.
- \* The sample preparation area should be located near, but separate from, the test room.
- \* A small stainless-steel sink and faucet are mandatory for evaluating mouthwashes, toothpastes, and household items.
- \* A conference-style room with tables that can be arranged according to the group's size and objective.
- \* Audiovisual equipment, including an "electronic whiteboard" or projector, for data display.
- \* Separate facilities for reference samples.
- \* Storage space for frozen, refrigerated, or room temperature samples.

**Entrance and Exit Areas** In large facilities, separate entrance and exit areas prevent information exchange. The exit area often includes a desk for studying identity samples and a "treat" to encourage participation.

**Office Facilities** An office within view of the panel booths houses records, storage, computer equipment, and phones/printers at a distance to minimize distractions.

**Storage** Space is allocated for storing samples before and after preparation, as well as reference samples and controls.

**General Design Factors**

- \* **Color and Lighting:** Neutral, unobtrusive off-white colors and minimal patterns minimize distractions. Red, green, or blue lighting at low intensity is a common feature.
- \* **Air Circulation, Temperature, and Humidity:** Sensory evaluation areas should be air-conditioned at 72°F–75°F and 45%–55% relative humidity.
- \* **Non-odorous:** Avoid materials like paper, fabric, carpeting, and porous tile that can harbor odors.
- \* **Color:** Use neutral, unobtrusive color schemes.
- \* **Plumbing:** Prevent product trapped in pipes from creating distracting odors.

**Construction Materials** The preparation area should accommodate the preparation of all possible sample combinations at the maximum required rate.

**Preparation Area**

- \* Laboratory benches flush with hatches for sample tray movement.
- \* Benches, kitchen range, ovens, refrigerators, and freezers.
- \* Storage for glassware, dishes, trays, and other equipment.
- \* Dishwashers, disposals, trash compactors, wastebaskets, sinks, and garbage containers.
- \* Storage for panel member treats.
- \* Central computer system for tracking products and panelists.

**Product Controls**

- \* The product researcher and sensory analyst seek to identify treatment effects such as ingredient changes, processing variations, packaging changes, and storage variables.
- \* The sensory analyst controls the early handling, preparation, and presentation of each product to prevent extraneous variables.
- \* The preparation area should be situated adjacent to the test area, with positive pressure feeding into the preparation area and air return and exhaust in the preparation area.

**Sample Preparation**

- \* **Supplies and Equipment:** Scales, glassware, timers, stainless-steel and glass equipment for mixing and storing products. Most plastic cutlery, storage containers, wraps, or bags are unsuitable due to potential volatile transfer.
- \* **Preparation Procedures:** Precisely measure product amounts by weight or volume.

Precisely measure added ingredients. \* Monitor preparation time and temperature. \* Define holding time (minimum and maximum time after preparation). **\*\*Sample Presentation\*\*** \* Container, Sample Size, and Other Particulars: Select equipment and procedures that minimize biases and new variables. \* Order, Coding, and Number of Samples: Balance the order of presentation so that each sample appears in a given position an equal number of times. \* Product Sampling: Determine the amount of product needed for evaluation and understand the product history. **\*\*Panel Training or Orientation\*\*** \* Familiarize panelists with test procedures: amount of sample, delivery system, contact time, disposition, score-sheet design, instructions, terminology, scales, and judgment type. **\*\*Panel Control\*\*** \* The procedure used by a panelist to evaluate a sample. **\*\*Product/Time of Day\*\*** \* Schedule evaluations of certain products at the time of day they are normally used or consumed. \* Avoid tasting highly flavored or alcoholic products early in the morning or immediately after meals or coffee breaks. \* Precondition panelists' skin, hair, nose, or mouth as necessary. **\*\*Panelists/Environment\*\*** \* Control the test environment to avoid biases. Colored lights, high humidity, or enclosed spaces can cause anxiety or distraction. \* Prepare panelists for the test situation, provide orientation and time to feel comfortable, and ensure they understand the protocols. **\*\*Factors Influencing Sensory Verdicts\*\*** \* Treat tasters as variable measuring instruments prone to bias. \* Understand physiological and psychological factors influencing perception. **\*\*Physiological Factors\*\*** \* Adaptation: Decrease in sensitivity to a stimulus due to continued exposure. \* Enhancement or Suppression: Interaction of simultaneously presented stimuli. \* Enhancement: One substance increases the perceived intensity of another. \* Suppression: One substance decreases the perceived intensity of a mixture. **\*\*Psychological Factors\*\*** \* Expectation Errors: Information given with the sample triggers preconceived ideas. \* Error of Habituation: Continuing to give the same response to a series of slowly increasing or decreasing stimuli. \* Stimulus Error: Irrelevant criteria, such as container style or color, influence the observer. \* Logical Errors: Two or more characteristics of the samples are associated in the assessors' minds. \* Halo Effect: Simultaneous scoring of various flavor aspects with overall acceptability produces different results than separate evaluation. **\*\*Order of Presentation of Samples\*\*** \* Five types of bias can be caused by the order of presentation: \* Contrast Effect: A good-quality sample presented before a poor-quality sample. \* Group Effect: One good sample presented in a group of poor samples is rated lower than if presented alone. \* Error of Central Tendency: Samples in the middle of a set are preferred over those at the ends. \* Time Error/Positional Bias: Attitude changes over a series of tests, from anticipation to fatigue. \* **POOR PHYSICAL CONDITION** \* Panelists should be excused from sessions if they have a fever, common cold, skin or nervous system disorders, poor dental hygiene, emotional upset, heavy workload, take medications affecting taste or smell, or are elderly. \* Smokers should refrain from smoking for 30–60 minutes before a panel. \* Strong coffee affects perception for up to an hour. \* Taste and smell dysfunctions are associated with chronic diseases.