COMPENDUIM OF INDIAN STANDARDS ON

SENSORY ANALYSIS OF FOOD PRODUCTS

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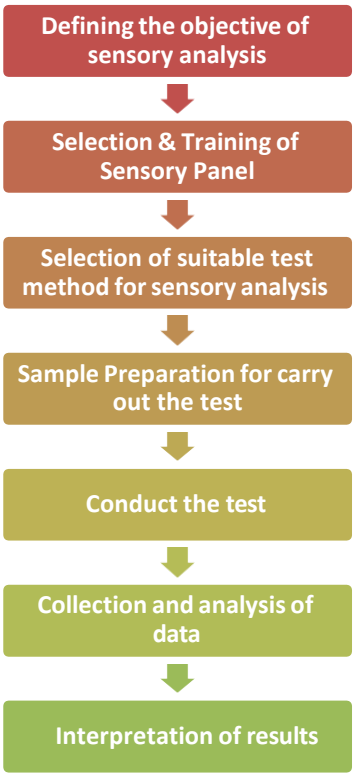
INTRODUCTION

Sensory evaluation has been defined as a scientific method used to evoke, measure, analyze, and interpret those responses to products as perceived through the senses of sight, smell, touch, taste, and hearing.

Sensory tests are widely used for product development, quality control, consumer preference testing and shelf-life evaluation.

A typical sensory analysis process involves the following key steps:



This compendium provides a categorized overview of Indian Standards on sensory analysis process. The categories include vocabulary and general guidance; selection, training and management of sensory panel; test methodologies; sample preparation and laboratory setup; statistical analysis; and application oriented sensory analysis.

The aim of this compendium is to guide manufacturers, quality control professionals and researchers in conducting reliable and reproducible sensory tests.

1. Indian Standards on Vocabulary and General Guidance for Sensory Analysis

1.1 IS 5126 : 2016/ ISO 5492 : 2008 Sensory analysis — Vocabulary (*second revision*)

This standard defines terminology used in sensory analysis across industries that evaluate products using human senses. It categorizes terms into four groups: general terminology, sensory-related terms, organoleptic attributes, and methodological terms.

1.2 IS 6273 (Part 1) : 2024 Guide for sensory evaluation of foods Part 1 — Optimum requirements

This standard covers optimum requirements of sensory evaluation of food, such as personnel, panel selection, laboratory set-up and equipment, sampling, and preparation and presentation of samples.

1.3 IS 17827 : 2022/ ISO 6658 : 2017 Sensory analysis methodology — General guidance

This standard covers general guidance on sensory analysis, covering assessor selection, test methods, environment, and data analysis. It defines objectives like product comparison and quality assurance, recommends suitable tests, and emphasizes minimizing bias, training assessors, and using proper statistical methods for accurate and consistent sensory evaluations.

1.4 IS 18372 : 2023/ ISO 13299 : 2016 Sensory Analysis — Methodology — General guidance for establishing a sensory profile

This standard provides guidance for establishing sensory profiles using trained panels to evaluate products through sight, smell, taste, touch, or hearing. It covers assessor selection, training, test room setup, sample handling, evaluation methods, data analysis, and reporting to ensure objective, reproducible, and standardized sensory assessments across industries.

2. Indian Standards on Selection, Training and Management of Sensory Panel

2.1 IS 15317 : 2017 / ISO 8586 : 2012 Sensory analysis — General guidelines for the selection, training and monitoring of selected assessors and expert sensory assessors

This standard specifies criteria for selecting, training, and monitoring assessors for sensory analysis. It covers assessor recruitment, screening, training in sensory perception and descriptor use, performance evaluation, and maintenance of skills so that assessors are capable of consistent, repeatable, and objective sensory evaluations across diverse food and non-food products.

2.2 IS 18364 : 2023/ ISO 11132:2021 Sensory analysis – Methodology — Guidelines for the measurement of the performance of a quantitative descriptive sensory panel

This standard provides guidelines for evaluating the performance of quantitative descriptive analysis panels and individual assessors. It is applicable to both validation of training and ongoing performance monitoring. It focuses on discrimination ability, assessor agreement, and scoring repeatability. However, it excludes methods like consensus profile, free-choice profile, flash profile, and temporal domination of sensations (TDS), as well as reproducibility assessments. Panel leaders may use the specified or alternative methods selectively to continuously assess and maintain panel and assessor performance.

2.3 IS 18365 (Part 1) : 2023/ ISO 13300-1:2006 Sensory Analysis — General guidance for the staff of a sensory evaluation laboratory Part 1: Staff responsibilities

This standard provides guidance on organizing sensory evaluation laboratories by defining staff roles to enhance efficiency and test reliability. It outlines qualifications and responsibilities for three functional roles: sensory manager, analyst/panel leader, and technician. Applicable across industries, it supports all sensory test types and adapts to various organizational sizes and structures.

2.4 IS 18365 (Part 2): 2023/ ISO 13300-2:2006 Sensory Analysis — General Guidance for the staff of a sensory evaluation laboratory Part 2: recruitment and training of panel leaders

This standard 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.

2.5 IS 15285 : 2016/ ISO 5496 : 2006 Sensory analysis — Methodology — Initiation and training of assessors in the detection and recognition of odours (*first revision*)

This standard describes several types of method for determining the aptitude of assessors and for training assessors to identify and describe odoriferous products. The methods described in this standard are suitable for use by the agri-foodstuffs industries employing olfactory analysis (e.g. perfumery, cosmetics and aromatics).

2.6 IS 17828 : 2022/ISO 11035 : 1994 Sensory analysis — Identification and selection of descriptors for establishing a sensory profile by a multidimensional approach

This standard provides a structured approach for identifying and selecting descriptors to establish a sensory profile using a multidimensional method. It outlines procedures for descriptor generation, refinement, and validation to ensure relevance, clarity, and

reproducibility in sensory analysis, enhancing the accuracy and consistency of profiling across products.

2.7 IS 8140 : 2023 Selection of panel for sensory evaluation of foods and beverages — Guide

This standard prescribes sensory tests for screening, selection and training of panellists arranged in increasing order of complexity of tasks and requiring increasingly higher level of training. The number of tests and test substances to be used in a particular selection and training requirement may be chosen appropriate to the nature and degree of differences, significant to the product.

2.8 IS 17825 : 2022/ ISO 3972:2011 Sensory analysis — Methodology — Method of investigating sensitivity of taste

This standard outline objective tests to train and assess sensory analysis panelists. It helps teach taste recognition, familiarize assessors with threshold tests, evaluate individual taste sensitivity, and assist supervisors in preliminary assessor classification. It can also be used to periodically monitor the ongoing taste sensitivity of trained assessors.

3. Indian Standards on Sensory Analysis Methodologies

3.1 IS 6273 (Part 2) : 1971 Guide for sensory evaluation of foods: Part 2 Methods and evaluation cards

This standard provides comprehensive guidelines for conducting sensory evaluation of foods. It details methods such as difference, rating, hedonic, sensitivity, and descriptive tests, specifying their procedures, applications, and data analysis techniques. The standard includes evaluation cards, supports both trained and untrained panels and recommends statistical methods to ensure reliable, reproducible results in food sensory testing under controlled conditions.

3.2 IS 17822 : 2022/ ISO 8588 : 2017 Sensory analysis — Methodology — A - not A Test

This standard outlines the "A"–"not A" test method to detect perceptible sensory differences between two product samples. It is used as a difference, recognition, or perception test, suitable for evaluating appearance or aftertaste variations. However, it is not appropriate for similarity testing, as it relies on repeated assessments by the same panelists for reliable discrimination.

3.3 IS 17824 : 2022/ ISO 4120 : 2021 Sensory analysis — Methodology — Triangle test

This standard outlines the triangle test, a forced-choice sensory method to identify perceptible differences or similarities between two homogeneous products. It is effective regardless of which attributes differ and is statistically more efficient than the duo-trio test. However, it is unsuitable for products with strong carryover effects and does not identify the nature, size, or direction of differences.

3.4 IS 17826 : 2022/ ISO 10399 : 2017 Sensory analysis – Methodology — Duo-trio Test

This standard describes the duo-trio test, a forced-choice method to determine sensory differences or similarities between two fairly homogeneous products. Though less efficient than the triangle test, it's easier for assessors. It applies even when the difference is unknown and supports assessor selection, training, and monitoring. Two techniques are included: constant-reference and balanced-reference approaches.

3.5 IS 17829 : 2022/ ISO 5495 : 2005 Sensory analysis – Methodology — Paired Comparison Test

This standard defines the paired comparison test, a simple forced-choice method to identify sensory differences or similarities between two homogeneous products based on a specific attribute. It determines if a perceptible difference exists and its direction but not its extent. Useful for testing product changes and for selecting, training, and monitoring sensory assessors.

3.6 IS 17830 : 2022/ ISO 8587 : 2006 Sensory analysis — Methodology — Ranking

This standard outlines a sensory evaluation method for ranking test samples based on intensity of one or more attributes or overall impression. It identifies if differences exist but not their magnitude. Applications include assessor training, threshold determination, sample pre-sorting, and evaluating effects of variables like ingredients or processing on product characteristics or hedonic preferences.

3.7 IS 17831 : 2022/ ISO 11036 : 1994 Sensory Analysis – Methodology — Texture Profile

This standard outlines a method for texture profile analysis of food and non-food products. It guides assessors in defining and evaluating textural attributes, establishing standard profiles, and detecting changes. Applications include product development, process optimization, comparative analysis, and correlating sensory data with instrumental measurements.

3.8 IS 18367 : 2023/ ISO 13301:2018 Sensory Analysis — Methodology — General guidance for measuring odour, flavour and taste detection thresholds by a three-alternative forced — Choice (3-AFC)

This standard provides guidance for measuring odour, flavour, and taste detection thresholds using the three-alternative forced-choice (3-AFC) method. It outlines experimental procedures, sample preparation, assessor selection and training, and data analysis using logistic models. It supports applications in sensory sensitivity studies, product quality evaluation and environmental monitoring.

4. Indian Standards for Sample Preparation and Laboratory Setup in sensory analysis

4.1 IS 15316 : 2016/ ISO 8589 : 2007 Sensory analysis — General guidance for the design of test rooms (*first revision*)'

This standard offers general guidance for designing sensory analysis test rooms, including essential and desirable requirements for testing, preparation, and office areas. It applies broadly to sensory testing environments but excludes facilities used for specialized inspections or in-plant quality control. It is not specific to any product or test type.

4.2 IS 15286 : 2003/ ISO 5497 Sensory analysis — Methodology — Guidelines for the preparation of samples for which direct sensory analysis is not feasible

This standard provides guidelines for preparing food samples unsuitable for direct sensory analysis due to intense flavor or challenging physical properties (e.g., viscosity, color, powderiness). It applies to concentrated products like spices and extracts but excludes items traditionally consumed as infusions, such as tea, coffee, or medicinal herbs.

5. Indian Standards on Statistical Analysis of Sensory Evaluation Data

5.1 IS 6273 (Part 3/Sec 1) : 1983 Guide for sensory evaluation of foods: Part 3 Statistical analysis of data: Section 1 difference/preference tests (*first revision)*

This standard outlines statistical methods for analyzing data from sensory evaluation of foods, focusing on difference and preference tests. It covers paired comparison, duo-trio, triangle, normal tests, preference matrix analysis, and chi-square tests. The standard guides test selection based on objectives, sample type, and panel structure.

5.2 IS 6273 (Part 3/Sec 2) : 2023 Sensory Evaluation of Foods — Guide: Part 3 Statistical analysis of data : Section 2 ranking and scoring tests

This standard covers ranking and scoring tests. The various tests included in this standard are Kramer's rank-sum test, Wilcoxon Mann-Whitney test, Friedman's test for concordance, Durbin's test, t-test, Mann-Whitney U-test, Wilcoxon matched-pairs signed-ranks test and range test.

6. Indian Standards on Application-Oriented Sensory Analysis

6.1 IS 18368 : 2023/ ISO 16779:2015 Sensory Analysis — Assessment (Determination and verification) of the shelf life of foodstuffs

This standard outlines method for determining and verifying the shelf life of food products through sensory evaluation of appearance, odour, flavour, taste, texture, and trigeminal sensations over time. It supports custom approaches and emphasizes that sensory testing complements, but does not replace, microbiological, chemical, and physical analyses.

6.2 IS 18369 : 2023/ ISO 20613:2019 Sensory Analysis — General guidance for the application of sensory analysis in quality control

This standard gives guideline for implementation of sensory analysis program in quality control (QC). It is limited to in-plant sensory analysis in QC, including general elements and procedures. It is applicable to food and non-food industries and is limited to in-plant sensory analysis in QC.

6.3 IS 18370 : 2023/ ISO 20784:2021 Sensory Analysis — Guidance on substantiation for sensory and consumer product claims

This standard provides guidelines for substantiating sensory claims on food and non-food consumer-packaged goods. It classifies sensory claims, offers examples, and addresses key testing considerations. It excludes detailed test methods, factual claims (e.g. origin, ingredients, health benefits), instrumental assessments without human input, service-related claims, and claims on large consumer goods. Case studies and references are included to aid application.

6.4 IS 17823 : 2022/ ISO 11037 : 2011 Sensory analysis — Guidelines for sensory assessment of the colour of products

This standard provides guidelines for sensory evaluation of product colours, applicable to various physical forms and appearances. It covers appropriate viewing and lighting conditions

for assessments like difference testing and profile analysis by trained panels or experts. It excludes consumer testing and evaluation of colour metamerism in food products.

6.5 IS 10642 : 2023 Consumer sensory evaluation of foods and beverages — Guide

This standard prescribes guidelines for consumer testing of foods and beverages in general. It is expected to provide an insight into consumer reactions, expectations and market potentials with regard to the product under study.

6.6 IS 10643 : 2023 Sensory evaluation procedure to establish guidelines for open dating processed food products

This standard provides sensory evaluation procedures to establish open-dating guidelines for processed food products. It includes sensory and physico-chemical analysis, panel training, and data interpretation to determine appropriate “sell-by,” “use-by,” and “best before” dates for consumer guidance.