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INTERNATIONAL UNION OF ARAB MASTER CHEFS

IUOAMC

APPLIED FLAVOR SCIENCE

From Ingredient Chemistry to Precise Cooking and Sensory Evaluation



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This edition expands all 100 topics with additional applied explanations while retaining the 12 laboratory exercises and 16 appendices. It adds eight connected case pages, four instrument-check cards, four diagnostic panels covering 16 faults, and a unified 60-term glossary.

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2. The flavor identity card

Start with product and purpose: a light tomato soup for immediate service differs from a concentrated sauce served in a small quantity. Write the intended function before using words such as balanced, so that an unstated personal preference does not become the criterion.

Record specific attributes: saltiness, sourness, aroma, texture and persistence. Give each an observation method and verbal reference. Record liking separately; stronger does not automatically mean better.

Add recipe ID, batch ID, final yield and serving method. Changes in these conditions can change the experience. An ingredient list alone is not enough to reproduce a sensory session.

Extended application and interpretation

Link each attribute to a sensory reference and serving method. “Herbal aroma 6” requires a defined herb, scale and portion temperature. Identity is an executable specification rather than a marketing description.

Table 3

Field	Working example
Product / version	Tomato soup / T-01
Portion	20 g in a standard cup
Texture target	Even flow without visible separation

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36. Measured and perceived acidity

pH describes a chemical property different from rated sourness. Two samples with similar pH can taste different because acid identity and matrix composition differ.

The scale is logarithmic: one pH unit corresponds to a tenfold change in hydrogen-ion activity by definition. It does not establish ten times the perceived sourness.

Record pH using a suitable calibrated instrument and note measurement temperature. Record perceived sourness separately. A sensory comparison does not determine shelf life or microbiological safety.

> **Extended application and interpretation**
>
> Distinguish pH from titratable acidity: one describes ion activity, the other the base required to a specified endpoint. Both can help explain samples sharing similar pH but differing in acid composition.

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Figure 23

$$\mathrm{pH} = -\log_{10} a(\mathrm{H}^+)$$

$$\Delta\mathrm{pH} = 1 \rightarrow \text{activity ratio} = 10$$

$$\text{perceived sourness} \neq \mathrm{pH}$$

Original diagram | example data are constructed for teaching

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Transformations during Cooking

Chapter objectives
Connect heat transfer to geometry, load and yield.
Specify a recorded thermal path rather than time alone.

73. A simplified energy balance

Heat is energy transferred because of a temperature difference, not a synonym for temperature. With material and temperature rise fixed, a larger mass needs more energy.

Use Q = m c ΔT when evaporation, phase changes and losses are neglected and heat capacity is treated as constant. Heating 1 kg water from 20 to 60°C with c ≈ 4.18 kJ/(kg·K) requires about 167.2 kJ absorbed energy, not actual burner consumption.

Extended application and interpretation
Device consumption requires input energy over time, whereas Q estimates absorbed energy. Their ratio indicates efficiency within the measurement boundary; label power alone does not establish actual energy consumption.

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Figure 57

$$Q = m\,c\,\Delta T$$
$$1 \times 4.18 \times (60 - 20) = 167.2\ \text{kJ}$$



Original educational diagram; calculations are examples, not field measurements.

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Integrated case 2: the weighed formula

Choose unsalted tomato purée, peeled onion, water, olive oil, salt and an identified herb. Salt percentages describe added salt only, excluding naturally occurring sodium. Cook the 1050 g tomato–onion–water base toward 950 g, then add oil, salt and herb through a documented process and verify a 1000 g output. This is a development mass target, not a universal cooking time. Weigh later additions, losses and withdrawn samples.

Table 49

Ingredient	Mass g
Unsalted tomato purée	700
Peeled onion	150
Water	200
Olive oil	40
Salt	6
Herb	4
Total inputs	1100

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$$1050 - 100 + 40 + 6 + 4 = 1000 \text{ g}$$

$$6 / 1000 \times 100 = 0.60\% \text{ added salt}$$

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Trilingual glossary 1

This page aligns terminology across all three languages. Read operational definitions in the relevant topics and appendices. A translated term does not make different measurement methods interchangeable.

Table 60

العربية	English	Français
النكهة	Flavor	Saveur globale
الطعم	Taste	Goût
الرائحة قبل الأكل	Orthonasal aroma	Arôme orthonasal
الرائحة أثناء الأكل	Retronasal aroma	Arôme rétronasal
الإحساس الفموي	Mouthfeel	Sensation en bouche
القبض	Astringency	Astringence
اللذع	Pungency	Piquant
شدة الصفة	Attribute intensity	Intensité d’un attribut
الاستساغة	Liking	Agrément
الملاءمة	Fitness for intended use	Adéquation à l’usage

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