INTERNATIONAL STANDARD

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Alimentary pasta produced from durum wheat semolina — Estimation of cooking quality by sensory analysis —

Part 2: Routine method

Pâtes alimentaires produites à partir de semoule de blé dur — Appréciation de la qualité de cuisson par analyse sensorielle — Partie 2: Méthode de routine

Reference number
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Foreword

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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.

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ISO 7304-2 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 4, *Cereals and pulses*.

ISO 7304 consists of the following parts, under the general title *Alimentary pasta produced from durum wheat semolina — Estimation of cooking quality by sensory analysis*:

— *Part 1: Reference method* [in preparation (revision of ISO 7304:1985)]

— *Part 2: Routine method*

Alimentary pasta produced from durum wheat semolina — Estimation of cooking quality by sensory analysis —

Part 2: Routine method

1 Scope

This part of ISO 7304 specifies a method for assessing, by sensory analysis, the quality of cooked alimentary pasta in the form of long, solid strands (e.g. spaghetti) or short, hollow strands (e.g. macaroni) produced from durum wheat semolina, expressed in terms of the starch release, liveliness and firmness characteristics (i.e. texture) of the pasta. It does not apply to pasta in the form of small strands usually consumed in soups.

The method may also be applied to alimentary pasta made from common wheat or a mixture of common wheat and durum wheat, as long as the appropriate national regulations allow these products to be used in alimentary pasta.

The method has been specifically developed to provide a procedure for the daily evaluation of pasta samples based on the use of reference samples.

The test result does not express a preference, but gives only an estimate of the cooking quality of the pasta after it has been cooked for the optimum cooking time.

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 8586-1, *Sensory analysis — General guidance for the selection, training and monitoring of assessors — Part 1: Selected assessors*

3 Terms and definitions

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

3.1
starch release
release of starch from cooked pasta, indicating the state of surface breakdown of the pasta

NOTE The amount of starch released can be assessed by means of a tactile investigation which estimates the tackiness of the surface to the touch.

3.2
liveliness
ability of one strand of pasta to slide smoothly over another, which depends on the degree of strand-to-strand adhesion

NOTE 1 Liveliness is applicable only to pasta in the form of long strands.

NOTE 2 It depends on the geometry of the product, on the stickiness of the surface and on the firmness of the pasta.

3.3
firmness
resistance of cooked pasta to crushing when it is positioned on the distal phalanx of the index finger and crushed with the tip of the thumb

3.4
optimum cooking time
t
time after which the continuous white line visible at the centre of a strand of pasta during cooking disappears, as determined by crushing using a crushing plate (6.11) in the case of long, solid strands of pasta (e.g. spaghetti) or by cutting the strand at right angles with a blade (6.12) in the case of short, hollow strands of pasta (e.g. macaroni).

NOTE By convention, the white line is considered to have disappeared when it is visible only as a row of dots (see Annex A).

4 Principle

A test sample of pasta is cooked by a standard procedure and the starch release, liveliness and firmness assessed. The test sample is then rated in accordance with the results.

5 Reagents

5.1 Tap water.

The best results are obtained if the hardness of the water is brought to (1,5 ± 0,1) mmol Ca^{2+}/l (French hardness 15 ± 1) with a dedicated water softener (6.10).

NOTE It is also possible to control the water hardness using a commercially available kit.

6 Apparatus

6.1 Balance, capable of weighing to the nearest 0,01 g.

6.2 Steel pot, thick-bottomed, diameter about 17 cm, capacity 2,5 l, with a lid.

6.3 Electric hotplate, diameter about 19 cm, power output about 1 500 W.

6.4 Colander, for pasta, made of stainless steel, diameter about 25 cm to 30 cm.

6.5 Timer.

6.6 Flat white plates, diameter (24 ± 2) cm.

6.7 Fork.

6.8 Graduated cylinder, capacity 1 l.

6.9 Glass beaker, capacity 250 ml.

6.10 Water softener.

6.11 Plexiglass crushing plate, thickness 5 mm, dimensions 140 mm × 40 mm, in conformity with Figure 1.

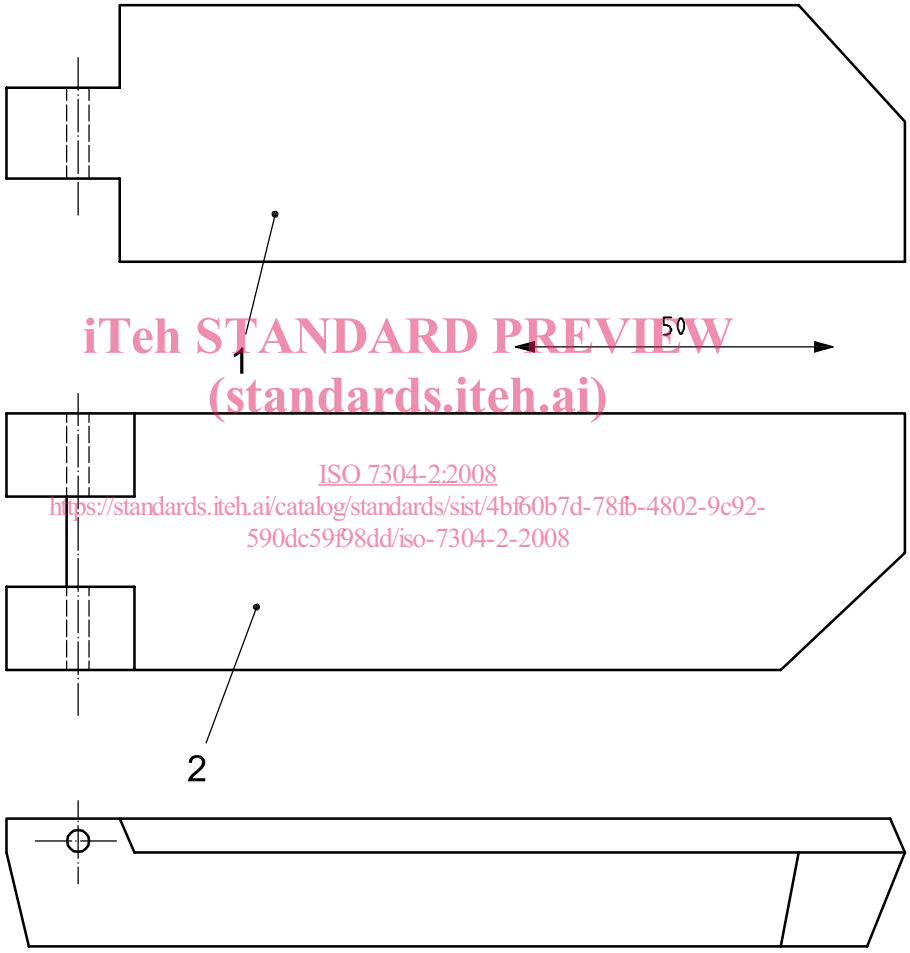
6.12 Cutter, with a sharp blade.

6.13 Micrometer suitable for measuring the thickness of short, hollow strands of pasta.

6.14 Micrometer suitable for measuring the thickness of long, solid strands of pasta.

6.15 Cup, volume about 200 ml.

Dimensions in millimetres



Key

1 cover
2 body

Figure 1 — Schematic diagram of crushing plate

7 Sampling

It is important that the laboratory receives a sample which is truly representative and has not been damaged or changed during transport or storage.

Sampling is not part of the method specified in this part of ISO 7304. A recommended sampling method is given in ISO 24333.

8 Cooking procedure

8.1 Determination of optimum cooking time (OCT), t

Determine the OCT before carrying out any tests, using the same cooking conditions as in 8.2, as follows.

Cook the pasta as described in 8.2, but two minutes before the estimated cooking time, usually written on the package by the manufacturer (or, if this is not the case, using a cooking time based on experience with pasta of similar thickness):

— with long, solid strands of pasta, remove a strand of pasta and crush it using the crushing plate (6.11);

— with short, hollow strands of pasta, remove a strand of pasta and cut it at right angles to the length with the cutter (6.12).

Repeat this operation every 30 s until the continuous white line, visible at the centre of the crushed strand or the cut section, disappears, as shown in Figures A.1 and A.2.

8.2 Sample preparation

Weigh out 100 g of pasta. With long, solid strands of pasta, break each strand into two halves (13 ± 2) cm long and eliminate any small bits before weighing.

Measure the thickness of each strand of pasta using the micrometer callipers (6.13 for short, hollow strands of pasta, 6.14 for long, solid strands of pasta).

Turn on the hotplate (6.3), always turning the control knob to the same position to ensure that the rate of cooking is always the same. Place the 2,5 l steel pot (6.2), containing 1 300 ml of tap water (5.1) measured using the graduated cylinder (6.8), on the hotplate. Boil the water. Keep the water close to boiling point so that it can be brought back to the boiling point as soon as the pasta is added.

Add the test sample of pasta to the pot and start the timer (6.5) at the same time. Cook the pasta for the time, t, determined in 8.1.

NOTE The OCT is the preferred cooking time, but different cooking times could be used for experimental purposes. Thus overcooking of the pasta could, for instance, be investigated by cooking the pasta for a time which is 25 % longer than the OCT.

For the first minute, keep the pot fully closed. For the remaining time, the lid shall be moved slightly to the side. While the pasta is cooking, mix it with a fork (6.7) three times for 10 s. Do this at one-quarter, one-half and three-quarters of the cooking time. When the pasta is cooked, cool the water by adding 200 ml of cold tap water to the pot using the beaker (6.9). Immediately pour the pasta into the colander (6.4) and allow to drain, gently hitting the colander three times within the first 5 s. Then put the whole test sample of pasta onto a plate (6.6), noting the time at which this was done. Leave the cooked pasta on the plate for 5 min.

Determine the characteristics of the pasta as described in Clause 9, beginning the assessment exactly 5 min after the pasta was put on the plate.

9 Evaluation procedure

9.1 General

Carry out the assessments in the order given in Table 1. Reference samples (see 9.5) may be included for comparison with the test sample when there are any doubts on the rating to be given. See also Annex B.

Table 1 — Assessment sequence

Long, solid strands	Short, hollow strands
Liveliness	—
Starch release	Starch release
Firmness	Firmness

9.2 Liveliness (only for long, solid strands of pasta)

To assess this characteristic, the assessor picks up the pasta with his/her naked hand and drops it back onto the plate to evaluate the liveliness, i.e. the degree of strand-to-strand adhesion, of the strands. This is done as follows:

— Put one hand in a cup (6.15) of cold tap water, remove it and shake off the excess water. Then wipe the hand dry.

— Pick up a handful of pasta from the plate and drop the pasta back onto the plate.

— Assess the way in which the strands of pasta separate from each other in the hand and the way they drop and settle on the plate, using the descriptions in Table 2.

— Repeat the procedure three times.

9.3 Starch release (all types of pasta)

To assess this characteristic, the assessor removes, with the naked hand, the material that covers the surface and evaluates the stickiness produced on his/her hand. This is done as follows:

— Put one hand in a cup (6.15) of cold tap water, remove it and shake off the excess water. Then wipe the hand dry.

— Place the hand on the pasta on the plate and rub it gently with the palm and fingers.

— Estimate the amount of starch coating the palm and fingers, using the descriptions in Table 2.

— Repeat the procedure three times.