



SLOVENSKI STANDARD SIST EN 1230-2:2002

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Paper and board intended for contact with foodstuffs - Sensory analysis - Part 2: Off-flavour (taint)

Papier und Pappe vorgesehen für den Kontakt mit Lebensmitteln - Sensorische Analyse - Teil 2: Geschmacksübertragung

Papier et carton destinés a entrer en contact avec les denrées alimentaires - Analyse sensorielle - Partie 2: Flaveur atypique (flaveur ou odeur parasite)

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ICS:

67.250	Materiali in predmeti v stiku z živil	Materials and articles in contact with foodstuffs
85.060	Papir, karton in lepenka	Paper and board

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EUROPEAN STANDARD

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Paper and board intended for contact with foodstuffs - Sensory analysis - Part 2: Off-flavour (taint)

Papier et carton destinés à entrer en contact avec les denrées alimentaires - Analyse sensorielle - Partie 2: Flaveur atypique (flaveur ou odeur parasite)

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This European Standard was approved by CEN on 30 September 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN /TC 172, "Pulp, paper and board", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2002, and conflicting national standards shall be withdrawn at the latest by April 2002.

EN 1230 contains the following parts:

- Part 1: Odour
- Part 2: Off flavour (taint)

The annexes A, B and C are informative ; annex D is normative. This European Standard also contains a Bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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EN 1230-2:2001 (E)**Introduction**

The taint test is valid for evaluation of whether the material to be tested may bring about a change in the taste (flavour) of the food to be in contact with the material. The test serves for evaluating the possible off-flavour transmitted from a paper and board intended for food packaging or otherwise to come into contact with foodstuffs. According to the results conclusions may be drawn as to the suitability of the material tested for packaging of foodstuffs.

For evaluation of the test substance three alternative testing procedures are described:

- 1) the triangle test;
- 2) the extended triangle test;
- 3) the multicomparison test.

It is recommended to use the triangle test when rating of the intensity of taint is not needed. This test is less affected by the presence of atypical data than the multicomparison test.

The extended triangle test, though very useful, is not used by the majority of sensory laboratories, as it is very demanding as regards the assessors. Two different psychological tasks are involved in these tests (difference and intensity) and the results are dependent on one another.

The multicomparison test may be preferred when a large number of samples are to be tested, as this procedure is less time consuming compared to the triangle tests. It is also the most common sensory test applied for evaluation of paper and board. The method is statistically less efficient than the triangle test.

NOTE The triangle and the extended tests are described in detail in ISO 5492. The multicomparison test is not described in any ISO Standard.

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In order to give reliable results this test should be performed by selected assessors.

The result may be influenced by the time elapsed between manufacturing and testing as well as by the storage conditions of the paper or board.

Part 1, "Odour" comprises the corresponding method for the estimation of odour originating from paper or board intended for food contact.

1 Scope

This European Standard specifies whether a paper or board sample contains substances which may be transmitted through the air space to a test substance and affect its taste. It is applicable to all kinds of paper and board, including coated and printed material, intended to come into contact with foodstuffs. It is not applicable for the determination of consumers' preference.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO 5492, *Sensory analysis — Vocabulary*.

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

ISO 8589, *Sensory analysis — General guidance for the design of test rooms*.

EN ISO 186, *Paper and board — Sampling to determine average quality (ISO 186:1994)*.

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1

taste

sensations perceived by the taste organ when stimulated by certain soluble substances [see ISO 5492]

3.2

flavour

complex combination of the olfactory, gustatory and trigeminal sensations perceived during tasting. The flavour may be influenced by tactile, thermal, painful and/or kinaesthetic effects [see ISO 5492]

3.3

taint

taste or odour foreign to the product [see ISO 5492]

3.4

off-flavour

atypical flavour often associated with deterioration or transformation of the product [see ISO 5492]

NOTE For simplicity, taste and flavour are used as synonyms in this European Standard, though this is not exactly in accordance with ISO 5492. The same regards taint and off-flavour.

3.5

sample

aggregate of all the specimens taken from the lot to provide information on the average quality of the lot and possibly serve as a basis for a decision on the lot [see EN ISO 186]

3.6

test piece

piece or pieces of paper or board on which the measurement is carried out in accordance with the stipulations of the methods of test

The test piece is generally taken from a specimen; in some instances the test piece may be the specimen itself, or several specimens [see EN ISO 186].

3.7

test substance

foodstuff intended to be packed, or a suitable test food product

3.8

test portion

portion of the test substance which is directly tested by the assessor [see ISO 5492]

3.8.1

test portion for analysis

quantity of test substance which has been stored along with the test pieces

3.8.2

test portion for control

quantity of test substance which has been stored in the same way but without test pieces

3.9

assessor

any person taking part in a sensory test [see ISO 5492]

EN 1230-2:2001 (E)**3.10****selected assessor**

assessor chosen for his/her ability to perform a sensory test [see ISO 5492]

3.11**triangle test**

method of difference testing involving the simultaneous presentation of three coded test pieces, two of which are identical. The assessor is asked to select the sample perceived as different [see ISO 5492]

3.12**extended triangle test**

triangle test where one portion is a test portion for analysis, and two are test portions for control. The assessor is asked to give a rating of the sample which he/she finds odd

3.13**multicomparison test**

test where the assessor is asked to give a rating of the intensity of the difference in taste between test portions for analysis and a known test portion for control

4 Principle

Test pieces of the material to be examined are stored in glass jars together with the test substance for 44 h to 48 h at (23 ± 2) °C at specified humidity, in the dark. The selected humidity (as given in 5.2 or 5.3) depends on the foreseeable use and/or an agreement with the customer. The selected humidity shall be stated in the test report. The test substance does not come into direct contact with the test piece. Any taint transferred to the test substance is evaluated by a panel consisting of selected assessors.

Three alternative procedures are described for the evaluation of the possible taint intensity.

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- a) the triangle test (one test portion for analysis and two for control, or vice versa, are presented to the assessor who is required to pick out the odd sample);
- b) the extended triangle test (the assessor is given one test portion for analysis and two for control. He/she is required to pick out the odd sample and evaluate the intensity of its possible taint);
- c) the multicomparison test (the assessor is required to score the intensity of one or several test portions for analysis, compared to a known test portion for control, which holds the taint intensity value of 0).

The intensity of the taint is evaluated by the use of a scale from 0 to 4 and the calculation of the median. A statistical significance test is performed in case of the triangle or extended triangle test.

5 Reagents**5.1 Test substance**

Whenever possible use the same sort of food as is intended to be packed in the material to be tested. If this is not possible a suitable test food product shall be chosen.

NOTE Foodstuffs are mostly too heterogeneous and non uniform or may have an intense intrinsic aroma so that they might be unsuitable for testing. In addition, it might be difficult, after two days storage, to differentiate between the taint originating from the foodstuff itself and from the paper or board to be tested.

The following test food products are given as examples:

- for meat, meat-based products, cheese and butter: butter or margarine;
- for fatty-food: milk chocolate, grated or sliced into thin chips. Store the chocolate at room temperature, but move it into a refrigerator 0,5 h to 1 h before grating;
- for dry, non-fatty-food: crushed biscuits without flavouring substances;

— for dairy products and other liquids: water.

5.2 Saturated magnesium nitrate solution

Add 130 g of pure $\text{Mg}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O}$ to 100 ml of odour-free tap water and allow the salt to dissolve to give a saturated solution standing over excess salt. A humidity of about 75 % prevails in a closed vessel with the aid of this solution.

5.3 Saturated sodium chloride solution

Add 50 g of pure NaCl to 100 ml of odour-free tap water and allow the salt to dissolve to give a saturated solution standing over excess salt. A relative humidity of about 53 % or 75 % prevails in a closed vessel with the aid of this solution.

6 Test panel

The test panel consists of at least six selected assessors under the understanding that six consistent results are given, i. e. that the total difference of the single results should not be more than 1,5. The members of the panel shall be trained in the evaluation of taint caused by paper and board. Guidelines concerning the testing and selection of assessors are given in ISO 8586-1.

The assessors shall be in good health and shall not suffer from the common cold at the time of the test.

NOTE It is recommended that a reference series is available for training of the assessors and to maintain the level of performance of the test panel. Unfortunately there are so far no recognised reference materials for ratings 1 to 4, but every laboratory should prepare its own series.

7 Test conditions

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The evaluation shall be carried out at $(23 \pm 2)^\circ\text{C}$ in a quiet, well ventilated room that is free from odours. The relative humidity of the room should be between 30 % and 75 %. Further information is given in ISO 8589.

8 Equipment

8.1 General

All equipment used shall be free from odour and only in use for sensory analysis. Use only minimum-odour cleaning agents for cleaning. An example of an efficient cleaning process is given in annex A.

An example of an assembly is presented in annex B.

8.2 Vessels

Glass or stainless steel, 1 l with ground glass lid, for example domestic preserve jars, or desiccators. The seal shall be free of odour.

NOTE The number of glass jars depends on the number of members in the test panel and the test substances used. Two jars are usually sufficient.

8.3 Petri dishes

Glass or plastics, diameter 80 mm to 140 mm to fit into the glass jars.

8.4 Supports for the Petri dishes in the glass jars

For example beakers, 50 ml to 100 ml, or glass rings. The test pieces may be supported by a stainless steel grid.