SLOVENSKI STANDARD
SIST EN 920:2002

01-maj-2002

Nadomeģ ļa:
SIST EN 920:2000

Papir, karton in lepenka, namenjeni neposrednemu stiku z ģivili - Dolo ļ evanje suhe snovi v vodnem ekstraktu

Paper and board intended to come into contact with foodstuffs - Determination of dry matter content in an aqueous extract

Papier und Pappe vorgesehen für den Kontakt mit Lebensmitteln - Bestimmung des Trockengehaltes in einem wässrigen Extrakt

Papiers et cartons destinés a entrer en contact avec les denrées alimentaires - Détermination de la teneur en matieres seches dans un extrait aqueux

Ta slovenski standard je istoveten z: **EN 920:2000**

ICS:

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

SIST EN 920:2002 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 920

September 2000

ICS 67.250; 85.060

Supersedes EN 920:1998

English version

Paper and board intended to come into contact with foodstuffs - Determination of dry matter content in an aqueous extract

Papiers et cartons destinés à entrer en contact avec les denrées alimentaires - Détermination de la teneur en matières sèches dans un extrait aqueux

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This European Standard was approved by CEN on 9 September 2000.

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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 Central Secretariat has the same status as the official versions.

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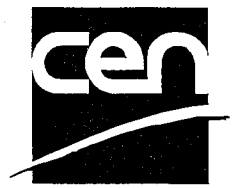

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 920:2000 E

Contents

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 March 2001, and conflicting national standards shall be withdrawn at the latest by March 2001.

This European Standard supersedes EN 920:1998.

With regard to EN 920 : 1998 the following changes have been made:

a) more precise explanations on the lower limit determination;
b) addition of a "water bath" as an alternative to the hot plate;
c) editorial updating.

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.

1 Scope

This European Standard specifies a test method for the determination of the dry matter content of a hot- or cold-water extract from paper or board. It is applicable to paper and board intended for boiling or filtering of foodstuffs.

The lower limit determination of the method is about 1000 mg/kg of paper. This corresponds to 1,000 mg/dm² of a paper with a grammage of 100 g/m² or 2,000 mg/dm² for a board with a grammage of 200 g/m².

NOTE: Some volatile, water-soluble substances may escape during evaporation of the extract and subsequent drying of the residue.

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).

EN 645
Paper and board intended to come into contact with foodstuffs – Preparation of a cold water extract

EN 647
Paper and board intended to come into contact with foodstuffs – Preparation of a hot water extract

EN 20287
Paper and board – Determination of moisture content – Oven-drying method (ISO 287 : 1985)

3 Terms and definitions

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

3.1 cold water extract: water solution obtained as a result of extraction with cold water [see EN 645].

3.2 hot water extract: water solution obtained as a result of extraction with hot water [see EN 647].

4 Principle

A sample is prepared and extracted as described in EN 645 or EN 647.

The extract obtained is filtered and then evaporated and dried at 105 °C. The evaporation residue is determined by weighing. The result is expressed in mg/dm² or in mg/kg of paper.

NOTE: In order to obtain a correct blank value, a sample of the water used for the extraction should be available.

5 Apparatus

5.1 Ordinary laboratory apparatus

5.2 Oven capable of maintaining a temperature of (105 ± 2)° C

5.3 Hot-plate or water bath

5.4 Balance accurate to 0,1 mg

5.5 Evaporation dish with a mass not exceeding 100 g and a minimum capacity of 100 ml

6 Sampling and preparation of sample

Sampling, preparation of sample and extraction shall be carried out as described in the European Standards for the preparation of cold or hot water extracts [see EN 645 and EN 647].

Filter the extract unless it has been filtered at the preparation stage.

7 Procedure

7.1 General

Two parallel extracts of 250 ml and two blanks shall be analysed.

7.2 Checking of the evaporation dish

Place the evaporation dish (5.5) in the oven (5.2) maintained at (105 ± 2)° C for a period of (30 ± 5) min. Allow the evaporation dish to cool to ambient temperature in a desiccator, weigh and record the mass of the evaporation dish.

Return the evaporation dish to the oven and repeat the cycle of heating, cooling and weighing until the mass differs by no more than 0,5 mg from the previous reading. Record this mass (m_d).

7.3 Determination of the residue

Transfer a portion of the extract to the evaporation dish. Place the evaporation dish on a hot-plate or water bath (5.3). Evaporate until the volume of the extract is reduced to a few millilitres. Ensure that only mild boiling occurs to avoid any loss, in particular by sputtering or overheating of the residue. Add another portion of the extract to the evaporation dish and continue the evaporation. Repeat this procedure until the whole extract (250 ml) has been evaporated.

NOTE: Only a portion of the extract needs to be evaporated if the content of dry matter in the extract is high.

The volume of the portion shall be so chosen that the residue after drying has a mass of at least 5 mg.

Place the evaporation dish in the oven (5.2) at (105 ± 2) °C for a period of (30 ± 5) min to complete the evaporation, and dry the residue.

Remove the evaporation dish from the oven, place it in a desiccator and allow it to cool to ambient temperature. Weigh the evaporation dish and record its mass (m_r).

Determine the mass (m_a) of the residue by subtracting the mass of the evaporation dish (m_d) from the mass of the evaporation dish and residue (m_r).

7.4 Blank test

Carry out the procedure described under 7.2 and 7.3 with the same water as used for the extraction. Use the same volume (V_1) as taken for evaporation (normally 250 ml) to establish the residue of the water (m_b).

The mass of the residue shall not exceed 5 mg.

8 Calculation

Calculate the content of dry matter in the water extract, expressed as mg/dm² of paper (8.1) or mg/kg of paper (8.2) as explained in formula 1 and 2.

8.1

$$M_1 = (m_a - m_b) \cdot \frac{V_o}{V_1} \cdot \frac{b}{100} \cdot \frac{1}{m} \qquad (1)$$

8.2

$$M_2 = (m_a - m_b) \cdot \frac{V_o}{V_1} \cdot \frac{1000}{m} \cdot \frac{100}{(100 - f)} \qquad (2)$$

where:

M_1 the content of water-soluble dry matter, in mg/dm²;
M_2 the content of water-soluble dry matter, in mg/kg;
m_a the residue after evaporation of the extract, in mg;
m_b the residue after the blank test, in mg;
V_0 the total volume of the extract (250 ml), in ml;
V_1 the volume of the evaporated portion of the extract (normally 250 ml), in ml;
b the grammage of the paper or board, in g/m²;
m the mass of the sample as taken (about 10 g), in g;
f the moisture content of the sample, as a percentage (determined as described in EN 20287).

8.3 Calculate the mean of the two determinations. Report the result with two significant figures.

The result is reported as "below the limit of determination" if the residue after evaporation of the whole extract (250 ml) is less than 10 mg.

9 Precision

An interlaboratory comparison was performed, comprising 12 laboratories. A repeatability (r) of below 15 % and a reproducibility (R) of the same order were found.

10 Report

The report shall refer to this European Standard and state:

a) all information necessary for complete identification of the sample;

b) date and place of testing;

c) the result, expressed as stated in 8.3;

d) whether the test was performed using a cold- or hot-water extract;

e) any deviation from this European Standard.