



**SLOVENSKI STANDARD**  
**SIST EN 920:1997**  
**01-september-1997**

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Paper and board intended to come into contact with foodstuffs - Determination of water soluble matter

Papier und Pappe vorgesehen für den Kontakt mit Lebensmittel - Wasserlösliche Bestandteile

**iTeh STANDARD PREVIEW**

Papiers et cartons destinés a entrer en contact avec les denrées alimentaires - Dosage de la matiere soluble dans l'eau

[SIST EN 920:1997](https://standards.iteh.ai/catalog/standards/sist/899c19ce-fe0f-47c0-b228-0298c53df079/sist-en-920-1997)

Ta slovenski standard je istoveten z: **EN 920:1994**

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**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 920:1997**

**en**

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EUROPEAN STANDARD

EN 920

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1994

ICS 85.060

Descriptors: Paper, paperboards, food products, food-container contact, tests, soluble matter, water, extraction, evaporation

English version

**Paper and board intended to come into contact  
with foodstuffs - Determination of water soluble  
matter**

Papiers et cartons destinés à entrer en contact  
avec les denrées alimentaires. Dosage de la  
matière soluble dans l'eau

Papier und Pappe vorgesehen für den Kontakt mit  
Lebensmittel - Wasserlösliche Bestandteile

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REPUBLIKA SLOVENIJA  
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO  
Urad RS za standardizacijo in meroslovje  
LJUBLJANA

SIST..... EN 920 .....

PREVZET PO METODI RAZGLASITVE

\*09- 1997

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**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

**Foreword**

This European Standard has been prepared by the 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of an identical text or by endorsement, at the latest by June 1995, and conflicting national standards shall be withdrawn at the latest by June 1995.

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

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## 1 Scope

This European Standard specifies a method for the determination of the quantity of water soluble matter extractable from paper and board by hot and cold water. The method is applicable only to paper and board intended for boiling and/or filtering of foodstuffs.

## 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.

- 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.

## 3 Definitions

For the purposes of this standard, the following definitions apply.

### 3.1 Cold water extract

The water solution obtained as a result of cold extraction (see EN 645).

### 3.2 Hot water extract

The water solution obtained as a result of hot extraction (see EN 647).

## 4 Principle

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

The cold or hot water extract obtained is filtered and then evaporated. The residue is weighed. The result is expressed in mg/dm<sup>2</sup> or in mg/kg.

NOTE: Because of the evaporation of the extract and subsequent drying of the residue, volatile water soluble matter can evaporate too.

## 5 Apparatus

### 5.1 Ordinary laboratory apparatus



5.2 Oven capable of maintaining a temperature of  $(105 \pm 2) ^\circ\text{C}$

5.3 Hot-plate

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

Sample preparation and extraction shall be carried out according to the methods for the preparation of hot or cold water extraction (see EN 645 and EN 647). The extract shall be filtered before the determination of water soluble matter.

## 7 Procedure

7.0 Carry out the determination by means of two extractions and two blanks, each made at the same time.

### 7.1 Preparation of the evaporation dish

Place an evaporation dish (5.5) in the oven (5.2) maintained at  $(105 \pm 2) ^\circ\text{C}$  for a period of  $(30 \pm 5)$  min. Cool the dish to ambient temperature in a desiccator, weigh and record the mass of the dish ( $m_d$ ).

Replace the dish in the oven and repeat the cycle of heating, cooling and weighing until the mass differs by no more than 0,5 mg. Record this mass ( $m_r$ ).

### 7.2 Determination of the residue

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Pipette at least 100 ml ( $V_1$ ) of the filtered extract into the tared evaporation dish and reduce the volume to a few milliliters by means of a hot plate. Take care to ensure that only mild boiling occurs to avoid loss, in particular by sputtering or overheating of the residue.

Place the dish in the oven at  $(105 \pm 2) ^\circ\text{C}$ , for a period of  $(30 \pm 5)$  min., to complete evaporation and dry the residue.

Remove the dish from the oven, place in a desiccator and cool it to ambient temperature. Weigh and record the mass.

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

### 7.3 Blank test

Carry out the procedure described under 7.1 and 7.2 with the same volume ( $V_1$ ) of water as used in the extractions to establish the residue of this water ( $m_b$ ).

The residue shall not exceed 5 mg/l.

## 8 Calculation

Calculate the water soluble matter in mg/dm<sup>2</sup> or mg/kg as follows:

### 8.1

$$M_1 = (m_a - m_b) \cdot \frac{V_0}{V_1} \cdot \frac{b}{100} \cdot \frac{1}{m} \quad (1)$$

### 8.2

$$M_2 = (m_a - m_b) \cdot \frac{V_0}{V_1} \cdot \frac{1000}{m} \cdot \frac{(100 - f)}{f} \quad (2)$$

where:

M <sub>1</sub>	water soluble matter in mg/dm <sup>2</sup>
M <sub>2</sub>	water soluble matter in mg/kg
m <sub>a</sub>	mass of the residue from the test specimen in mg
m <sub>b</sub>	mass of the residue of the water in mg
V <sub>0</sub>	total volume of extract (250 ml) in ml
V <sub>1</sub>	volume taken for evaporation in ml
b	grammage in g/m <sup>2</sup>
m	mass of the sample as taken in g
f	water soluble content of the sample in %

8.3 Calculate the mean of the two determinations to one decimal place.

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## 9 Repeatability and reproducibility

The test method has been found in an interlaboratory test (n = 12) with 4 samples in a hot water extract a repeatability (r) not exceeding 10 % and a reproducibility (R) not exceeding 20 % on a level of 1 mg/dm<sup>2</sup> and of 15 % on a higher level.

## 10 Report

The test report shall refer to this European Standard and state:

- nature, origin and designation of the sample
- date of sampling, if available
- date of test
- mean result
- any deviation from this European Standard