



SLOVENSKI STANDARD
SIST EN 648:1997

01-september-1997

Določitev trdnosti optično beljenega papirja in kartona, namenjenega za stik s hrano - Določitev trdnosti optično beljenega papirja in kartona

Paper and board intended to come into contact with foodstuffs - Determination of the fastness of fluorescent whitened paper and board

Papier und Pappe vorgesehen für den Kontakt mit Lebensmitteln - Bestimmung der Farbechtheit von optisch aufgehelltem Papier und Pappe

Papier et carton destinés à entrer en contact avec les denrées alimentaires - Détermination de la solidité du papier et du carton blanchis par des agents d'azurage fluorescents

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Ta slovenski standard je istoveten z: EN 648:1993

ICS:

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

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EUROPEAN STANDARD

EN 648:1993

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 1993

UDC 676.2:663/664:620.1:535.68

Descriptors: Paper, paperboards, food products, food-container contact, measurements, colourfastness, bleaching, bleaching agents

English version

**Paper and board intended to come into contact
with foodstuffs - Determination of the fastness of
fluorescent whitened paper and board**

Papier et carton destinés à entrer en contact
avec les denrées alimentaires - Détermination
de la solidité du papier et du carton blanchis
par des agents d'azurage fluorescents

Papier und Pappe vorgesehen für den Kontakt mit
Lebensmitteln - Bestimmung der Farbechtheit von
optisch aufgehelltem Papier und Pappe

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

SIST..... EN 648

PREVZET PO METODI RAZGLASITVE

-09- 1997

This European Standard was approved by CEN on 1993-10-01. 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 Central Secretariat or to any CEN member.

The European Standards exist 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.

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

CEN

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

Central Secretariat: rue de Stassart, 35 B-1050 Brussels

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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 National Standard, either by publication of an identical text or by endorsement, at the latest by april 1994, and conflicting National Standards shall be withdrawn at the latest by april 1994.

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 and the United Kingdom.

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1 Scope

This European Standard describes procedures for the testing of fluorescent whitened paper and board intended to come into contact with foodstuffs. Two procedures are given. Procedure A for contact of long duration (e.g. food-packaging) and procedure B for contact of short duration (e.g. napkins, kitchen papers, household papers).

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.

ISO 186 Paper and board - Sampling to determine average quality

ISO 8787 Paper and board - Determination of capillary rise - Klemm method

3 Definition

For the purposes of this standard, the following definition applies.

Colour fastness: The extent of releasing the fluorescent whitened paper or board sample means the extent of releasing the fluorescent whitening agents from the sample to the glass fibre papers saturated with a test fluid, evaluated visually under UV-light by comparing with a series of comparison papers.

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4 Principle

A sample is brought into contact with glass fibre papers which have been saturated with a test fluid and placed under load for a given time. The staining of the glass fibre paper is evaluated by comparison with a series of fluorescent whitened comparison papers. The test fluids used are water, dilute acetic acid, sodium carbonate solution and olive oil.

5 Test materials and equipment

5.1 Glass fibre papers of 60 mm x 90 mm. The glass fibre papers shall meet the following conditions:

- a) grammage 70 g/m²;
- b) capillary rise of 190 mm to 210 mm in 10 min in accordance with ISO 8787;
- c) free from fluorescent whitening and wetstrength agents;
- d) free from cellulosic fibres;

5.2 Glass plates, 60 mm x 90 mm.

5.3 Polyethylene film, uncoloured and transparent.

5.4 Mass, 1 kg.

5.5 UV lamp with blocking filter for UV-A (365 nm).

6 Reagents

6.1 Fluorescent whitening agents (FWAS) with Constitution No. 40622 in accordance with Colour Index II, 1956 Edition (The Society of Dyers & Colorists, P.O. Box 244, Perkin House, 82 Grattan Road, Bradford BDJ 2 JB, West Yorkshire). An aqueous solution of this whitening agent shall exhibit the following absorbancy.

Absorbancy (0,350 ± 0,01) or (0,420 ± 0,01)
Wave length 365 nm resp. 350 nm
Path length 1 cm
Test solution 10 mg FWAS in 1 l water (6.2)
Measurement against water (6.2)

Deviation of this absorbancy makes adjustments of the amount of fluorescent whitening agent used in 11.1 necessary. The correction shall be made in line with the absorbancy found.

6.2 Distilled or deionised water.

6.3 Aqueous acetic acid 1,5 %.

6.4 Sodium carbonate solution (5 g/l).

6.5 Rectified olive oil, characterized as follows:

- iodine value (Wijs) 80 to 88
- refractive index at 25 °C 1,4665 to 1,4679
- acidity (expressed as % oleic acid) max. 0,5 %
- peroxide number (expressed as oxygen milli-equivalents per kg oil) max. 10

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7 Sampling

Sampling is carried out in accordance with ISO 186.

8 Preparation of sample

Take from the sample under investigation several test pieces 50 mm x 20 mm by cutting or punching so that smooth edges are obtained.

9 Procedure A (long duration contact)

9.1 Immerse two sheets of glass fibre paper (5.1) in a test fluid (6.2, 6.3, 6.4 or 6.5). Remove the sheets after saturation and free the sheets from excess fluid by wiping on the rim of the container.

9.2 Lay one sheet of glass fibre paper with its smooth side upwards on the glass plate (5.2). Lay the test piece (8) immediately on top and cover it with the second saturated sheet of glass fibre paper so that the same side of the glass fibre paper is in contact with the test piece. Place a second glass plate (5.2) on top, wrap the total assembly in polyethylene film (5.3) to prevent the edges from drying out, load it with a mass of 1 kg (5.4) and allow it to stand for 24 h at (23 ± 2) °C with protection against direct light penetration.

9.3 If test pieces of a grammage $> 140 \text{ g/m}^2$ are to be investigated, an appropriate even number of glass fibre paper layers (5.1) is used so that the total of their grammages just exceeds the grammage of the test piece.

Construct the assembly as described in 9.2, with each glass fibre paper being individually saturated and wiped, and arranged in such a way that the same number of glass fibre papers are in contact with both sides of the test piece.

9.4 After 24 h, open the assembly. Lay the glass fibre papers on 3 adjacent glass rods, $\varnothing 8 \text{ mm}$ to 10 mm , with the side which was in contact with the test piece upwards, cover them without contact to prevent light penetration and air-dry at ambient temperature. Glass fibre papers saturated with olive oil are not dried.

10 Procedure B (short time contact)

10.1 Immerse two sheets of glass fibre papers (5.1) in a test fluid (6.2, 6.3, 6.4 or 6.5). Remove the sheets after saturation and free the sheets from excess fluid by wiping on the rim of the container.

10.2 Lay one sheet of glass fibre paper with its smooth side upwards on the glass plate (5.2). Lay the test piece (8) immediately on top and cover it with the second saturated sheet of glass fibre paper so that the same side of the glass fibre paper is in contact with the test piece. Place a second glass plate (5.2) on top, wrap the total assembly in polyethylene film (5.3) to prevent the edges from drying out, load it with a mass of 1 kg (5.4) and allow it to stand for 10 min at $(23 \pm 2) \text{ }^\circ\text{C}$ with protection against direct light penetration.

10.3 After 10 min , open the assembly. Lay the glass fibre papers on 3 adjacent glass rods, $\varnothing 8 \text{ mm}$ to 10 mm , with the side which was in contact with the test piece upwards, cover them without contact to prevent light penetration and air-dry at ambient temperature. Glass fibre papers saturated with olive oil are not dried.

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11 Comparison papers

11.1 Solutions for comparison papers

Dissolve 1 g of fluorescent whitening agent (6.1) in 800 ml water (6.4) and make up to 1 l . Using this stock solution, prepare the following standard concentrations.

Table 1:

Evaluation grade	FWA solution	FWA mg/l
1	Stock solution	1000
2	125 ml stock solution diluted to 1 l	125
3	31 ml stock solution diluted to 1 l	31
4	8 ml stock solution diluted to 1 l	8
5	-----	0

The stock solutions and the dilutions shall always be freshly prepared.

11.2 Preparation of fluorescent whitened comparison papers

Glass fibre papers (5.1) are used as comparison papers and are treated as follows:

Drop 5 drops of each of the four different FWA-solutions described in 11.1 into the centre of four glass fibre papers so that stains of approx. 20 mm to 30 mm diameter are created. Air-dry the glass fibre papers in darkness and mark them with the number of the evaluation grade which corresponds to the FWA-solution.

For the test of fastness in olive oil, use comparison papers which are subsequently immersed in olive oil (6.5). To remove the excess oil, press the comparison papers briefly between dry filter papers.

12 Evaluation

Compare the staining of the glass fibre papers on the side with which they were in contact with the sample with the comparison papers prepared in accordance with 11.2 under the UV lamp (5.5). Use UV light in the range UV-A to illuminate the samples. When several layers glass fibre papers are used, evaluate only the layer that was in contact with the test piece.

A distinction is drawn between 5 different evaluation grades: Grade 1 signifies poor fastness; grade 5 signifies good fastness. The evaluation grade of the comparison paper which is the most similar to the stained glass fibre paper is given as the evaluation grade of the tested paper.

If the two sides of the sample produce different results, the test report shall state to which side of the sample the data relates.

NOTE: In the case of paper or board that comes into contact with foodstuffs only with one side (e.g. foodpackaging) and it is known which side is facing the food, only this side will be evaluated.

13 Test report

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

- a) test result;
- b) designation of the paper or board tested; side tested if applicable;
- c) procedure A or B;
- d) test fluids and associated evaluation notes;
- e) date of test;
- f) any deviation from this European Standard.

14 Additional Information

Faint fluorescence (small bright spots) may appear at the glass fibre paper without transfer of fluorescent whitening agents. This phenomenon may be caused by other components in the paper from the edges of the sample piece or from dust from the air, and should not be taken as bleeding of fluorescent whitening agents. Therefore fluorescence clearly less than corresponding with grade 4 is not necessarily an indication of bleeding of fluorescent whitening agents.
