



SLOVENSKI STANDARD

SIST EN 646:2019

01-januar-2019

Nadomešča:
SIST EN 646:2006

Papir, karton in lepenka, namenjeni za stik z žvili - Ugotavljanje obstojnosti barve v obarvanem papirju, kartonu in lepenki

Paper and board intended to come into contact with foodstuffs - Determination of colour fastness of dyed paper and board

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

Papiers et cartons destinés à entrer en contact avec les denrées alimentaires - Détermination de la solidité de la couleur des papiers et cartons colorés

Ta slovenski standard je istoveten z: EN 646:2018

ICS:

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

SIST EN 646:2019 en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 646

November 2018

ICS 67.250; 85.060

Supersedes EN 646:2006

English Version

Paper and board intended to come into contact with
foodstuffs - Determination of colour fastness of dyed paper
and board

Papiers et cartons destinés à entrer en contact avec les
denrées alimentaires - Détermination de la solidité de
la couleur des papiers et cartons colorés

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

This European Standard was approved by CEN on 22 July 2018.

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 CEN-CENELEC Management Centre or to any CEN member.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

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European foreword

This document (EN 646:2018) 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 May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 646:2006.

With regard to EN 646:2006 the following changes have been made:

- a) Clause 1 “Scope” has been revised and extended;
- b) in Clause 6 “Reagents” the test fluid “saliva simulant ” has been removed and the test fluid “alkaline salt solution” has been introduced;
- c) new test conditions, matching the use of the tested papers and boards have been included;
- d) new definition for the glass fibre papers has been included;
- e) evaluation against a grey scale only has been included;
- f) editorial changes.

Attention shall be drawn to the fact that the glassfibre papers have not been duly validated before the publication of this standard.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 646:2018 (E)**1 Scope**

This document describes procedures for the testing of dyed paper and board intended to come into contact with foodstuffs. Some procedures depending on the foreseeable use of the material are given.

Visual evaluation against a grey scale provides grading of the bleeding.

For samples having significant different sides, a migration can occur from one glass fibre to the other and could lead to wrong interpretation of the fastness of one side. It is advisable to check these samples using large sampling procedure to prevent cross contamination of the glass fibre during the migration procedure. The procedure is described in Annex A. If lower limit of detection is required, this procedure could also be used.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 20105-A03, *Textiles - Tests for colour fastness – Part A03: Grey scale for assessing staining (ISO 105-A03)*

EN ISO 186, *Paper and board - Sampling to determine average quality (ISO 186)*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696)*

ISO 6588-2, *Paper, board and pulps - Determination of pH of aqueous extracts – Part 2: Hot extraction*

3 Terms and definitions

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For the purposes of this document, the following term and definition applies.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1**colour fastness**

lack of transfer of colour from a paper to a non-stained glass-fibre paper, saturated with a test fluid and evaluated visually for staining against a grey scale

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 and temperature. The staining of the glass fibre paper is evaluated against a grey scale. The test fluids used are distilled or deionized water, diluted acetic acid, alkaline salt solution and olive oil depending on the type of contact expected.

5 Materials and equipment

5.1 Unstained glass fibre papers¹ of 60 mm × 90 mm. The glass fibre papers shall meet the following conditions:

- a) grammage 70 g/m²;
- b) pH-value 9,0 to 9,5, measured in the hot water extract according to ISO 6588-2;
- c) free from fluorescent whitened and wet strength agents;
- d) free from cellulosic fibres.

5.2 Glass plates, 60 mm × 90 mm.

5.3 Polyethylene film, uncoloured and transparent.

5.4 Mass, 1 kg.

5.5 Grey scale in accordance with EN 20105-A03.

5.6 Drying cupboard.

5.7 Kettle.

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6 Reagents

6.1 Distilled or deionized water, purity in accordance to EN ISO 3696, grade 3.

6.2 Aqueous acetic acid, 3,0 % (m/v).

6.3 Alkaline salt solution, see Table 1, composition of the alkaline salt with a pH of 8,6 ± 0,1.

Table 1 — Composition of alkaline salt solution

Chemical	Mass fraction g/l
Sodium hydrogen carbonate (NaHCO ₃)	4,2
Sodium chloride (NaCl)	0,5
Potassium carbonate (K ₂ CO ₃)	0,2

6.4 Vegetable oil, that should be as defined in Commission Regulation (EU) No 10/2011.

7 Sampling

If a lot is tested then sampling is carried out in accordance with EN ISO 186.

¹ A source for examples of glass fibre papers can be obtained at DIN Standards Committee Paper, board and pulps (NPa) [npa@din.de]. <http://www.din.de/en/getting-involved/standards-committees/npa>.

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8 Preparation of sample

Cut or punch several test pieces of 50 mm × 20 mm from the sample under investigation. Smooth edges shall be obtained.

9 Procedure

9.1 In case of test conditions D, the glass plates (5.2), the mass (5.4) and the vegetable oil (6.4) are stored for 1 h at testing temperature in a drying cupboard (5.6); distilled or deionized water (6.1) is boiled in kettle (5.7). The use of cotton gloves is sufficient.

9.2 Immerse two sheets of unstained glass fibre papers (5.1) in a test fluid (6.1, 6.2, 6.3 or 6.4). Remove the sheets after saturation and free the sheets from excess fluid by wiping on the rim of the container.

9.3 Place one sheet of unstained glass fibre paper with its smooth side upwards on the glass plate (5.2). Place the test piece (Clause 8) immediately on the unstained glass fibre paper. Cover it with the second saturated sheet of unstained glass fibre paper, so that the smooth side of the unstained glass fibre paper is in contact with the test piece again. Place a second glass plate (5.2) on top of the second unstained glass fibre paper and for procedures A and B 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 under the condition of Table 2 with protection against direct light penetration.

9.4 If test pieces of a grammage of > 140 g/m² are to be investigated, an appropriate even number of unstained glass fibre paper layers (5.1) is used so that the total of their grammages just exceeds the grammage of the test piece.

9.5 After the storage time open the assembly. Place the unstained glass fibre papers on 3 adjacent glass rods, Ø 8 mm to Ø 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. Unstained glass fibre papers saturated with olive oil are not dried.

10 Test conditions

Table 2 describes the test conditions of EN 646.

Table 2 — Test conditions of EN 646

Procedures A - D	Simulation of the contact
Procedure A 24 h at (23 ± 2) °C	long duration contact
Procedure B 4 h at (23 ± 2) °C	medium time contact
Procedure C 10 min at (23 ± 2) °C	short time contact
Procedure D 30 min at (120 ± 3) °C in oil 30 min at (90 ± 3) °C in water	hot contact fatty food moist food

Test conditions A also covers test conditions B and C and long-time duration of hot contact is covered by A and D.

11 Evaluation

Evaluate the staining of the glass fibre papers on the side with which they were in contact with the sample using the grey scale (5.5). When several layers of unstained glass fibre papers are used, evaluate only the layer that was in contact with the test piece. If the two sides of the sample produce different results, the test report shall state to which side of the sample the data relates.

For the grading a distinction is drawn between different evaluation grades: Grade one signifies poor fastness; grade five signifies good fastness. The grade of the grey scale which is the most similar to the stained glass fibre paper, beginning at 4/5, is given as the evaluation grade of the tested paper. The choice between 5 and 4/5 is also made to the most similar grade.

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

12 Test report

The test report shall include the following information:

- a) a reference to this document, i.e. EN 646:2018;
- b) a test result, evaluation of grading;
- c) a designation of the paper or board and identification of the sample tested; side tested if applicable;
- d) the used procedure (A to D);
- e) the test fluids and associated evaluation notes;
- f) the quality of the unstained glass fibre papers;
- g) the date of testing;
- h) any deviation from this document.

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