

English Version

**Paper and board intended to come into contact with foodstuffs -  
Preparation of an organic solvent extract**

Papier et carton destinés à entrer en contact avec les  
denrées alimentaires - Préparation d'un extrait au solvant  
organique

Papier und Pappe vorgesehen für den Kontakt mit  
Lebensmitteln - Herstellung eines organischen  
Lösemittelextraktes

This European Standard was approved by CEN on 23 September 2007.

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

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



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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

Contents		Page
Foreword.....		3
1	Scope .....	4
2	Normative references .....	4
3	Terms and definitions .....	4
4	Principle.....	4
5	Materials and equipment.....	4
6	Reagents .....	5
7	Sampling .....	5
8	Procedure .....	5
9	Expression of results .....	6
10	Test report .....	6
Bibliography .....		7

## Foreword

This document (EN 15519:2007) 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of an identical text or by endorsement, at the latest by May 2008, and conflicting national standards shall be withdrawn at the latest by May 2008.

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

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard specifies a test method for the assessment of substitute tests performed with volatile test media for the determination of migration from paper and board intended to come into contact with fatty foodstuffs at all temperatures and for any period of time.

NOTE At the time that this European Standard was prepared, the EU directives for material coming into contact with food required use iso-octane or 95 % v/v aqueous ethanol.

## 2 Normative references

The following referenced documents are indispensable for the application 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 1186-1:2002, *Materials and articles in contact with foodstuffs — Plastics — Part 1: Guide to the selection of conditions and test methods for overall migration*

EN ISO 186, *Paper and board — Sampling to determine average quality (ISO 186:2002)*

## 3 Terms and definitions

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

### **solvent extract**

filtered solvent solution obtained as a result of the extraction

NOTE In certain instances this extract can contain small amounts of suspended particles.

## 4 Principle

The sample is cut and extracted with iso-octane or 95 % v/v aqueous ethanol. The conditions used for simulating contact with fatty foodstuffs in general are 2 h at 20 °C for short time simulating contact or 24 h at 20 °C for long time simulating contact. For baking or cooking applications the test conditions to use are 2 h at 60 °C. In special cases other conditions are possible and they shall be stated in the test report. After extraction, the extract, if necessary, has to be filtered. The extract or the filtrate (solvent extract) is used for investigation of the extractives.

NOTE Test times longer than 24 h are not necessary. Test temperatures more than 60 °C are not possible due to the boiling point of the solvents.

## 5 Materials and equipment

Ordinary laboratory apparatus and:

**5.1 Analytical balance**, capable of determining a change in mass of 0,01 mg.

**5.2 500 ml conical glass flasks**, wide neck with ground glass stopper with tap (see ISO 1773).

**5.3 Filtration equipment**, fritted-glass filter porosity 4 (nom. size 90) with filter flask of 500 ml (see ISO 6556).

**5.4 Graduated measuring cylinder made of glass, 250 ml.**

**5.5 One-mark volumetric glass flask, 250 ml** (see EN ISO 1042).

**5.6 Protective gloves** (e.g. cotton).

**5.7 Thermostatically controlled oven**, incubator or refrigerator capable of maintaining a temperature within the range of 20 °C to 60 °C and within the tolerances as specified in EN 1186-1:2002, Table B.2.

**WARNING — The interior/sample space of the oven, incubator or refrigerator should not have any exposed heating elements, to minimise safety hazards arising from any loss of the flammable solvents from the tubes during the test period.**

## 6 Reagents

### 6.1 General

All reagents shall be of a recognized analytical quality, unless otherwise specified.

**6.2 Iso-octane**, (2,2,4-trimethyl pentane), purity 98,5 % (v/v) or greater, CAS No. 540-84-1.

**6.3 Ethanol**, purity 96 % (v/v) or greater, CAS No. 64-17-5. Prepare from this a 95 % aqueous ethanol solution. The solvent ratio used should be adjusted to allow for the initial water content (if any) of the 96 % purity ethanol reagent so that the final test medium contains 95 % ethanol and 5 % water v/v.

**WARNING — Both solvents are flammable. Take care at all times when handling these solvents to prevent contact with sources of ignition.**

## 7 Sampling

**7.1** Sampling is carried out in accordance with EN ISO 186. Do not touch the test area of the sample or specimen with fingers. Protective gloves (5.6) shall be used.

**7.2** A minimum of 10 g of the sample is required.

**7.3** If required, take a separate sample for the determination of the grammage in accordance with EN ISO 536 and/or for the determination of moisture content (see EN 20287).

## 8 Procedure

**8.1** Cut the sample as taken into pieces of approximately 1 cm<sup>2</sup> to 2 cm<sup>2</sup>. Use protective gloves (5.6).

**8.2** Weigh (10 ± 0,1) g of the test pieces and put them into the conical flasks (5.2). Add 200 ml of the appropriate solvent and stopper the volumetric glass flask (5.5). Leave the preparation to stand under the selected conditions and shake from time to time. If testing above ambient temperature for less than 24 h then preheat the solvent in the conical flask to 60 °C and then add the sample to the warm solvent.

Decant the solution and wash the test pieces in the flask twice with small portions of fresh solvent. If necessary, filter the extract using equipment as defined in 5.3. Transfer the extract and washings or the filtrate to a marked volumetric flask (5.5) and fill up to the mark with the solvent. Use the content of the flask for further investigations.

**NOTE** If more than 250 ml of organic solvent extract is required, appropriate scaling up can be used.



## 9 Expression of results

Express the amount of measured component extracted into the solvent as milligram per square decimetre of the specimen taking into account the grammage and counting only the simple area of the specimen (e. g. 10 cm × 10 cm square specimen is taken in calculations as 1 dm<sup>2</sup> and not as the 2 dm<sup>2</sup> surface area).

## 10 Test report

The test report shall include the following information:

- a) reference to this European Standard (EN 15519:2007);
- b) information necessary for complete identification of the sample, such as chemical type, supplier, trade mark, grade, batch number, grammage;
- c) conditions of time and temperature of exposure to the solvent and the solvent used;
- d) departure from the specified procedure that may have affected the result;
- e) individual test results, and mean of these, expressed in milligrams residue per square decimetre of sample;
- f) relevant comments on the test results.

## Bibliography

- [1] EN ISO 24450, *Laboratory glassware — Wide-necked boiling flasks (ISO 24450:2005)*
- [2] EN 20287, *Paper and board — Determination of moisture content — Oven-drying method (ISO 287:1985)*
- [3] EN ISO 536, *Paper and board — Determination of grammage (ISO 536:1995)*
- [4] EN ISO 1042, *Laboratory glassware — One-mark volumetric flasks (ISO 1042:1998)*
- [5] ISO 6556, *Laboratory glassware — Filter flasks*
- [6] ISO 1773, *Laboratory glassware — Narrow-necked boiling flasks*