

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

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EESTI STANDARDI EESSÖNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1541:2002 sisaldab Euroopa standardi EN 1541:2001 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 16.01.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1541:2002 consists of the English text of the European standard EN 1541:2001.</p> <p>This document is endorsed on 16.01.2002 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: Standard määrab kindlaks formaldehüüdisalduse määramismeetodi vesiekstraktidest, mis on valmistatud toiduainetega kokkupuutuvast paberist ja papist. Määramispiiriks on 0,01 mg/dm² või 10 mg/kg paberi või papi kohta. Toiduainetega toatemperatuuril kokkupuutuvate materjalide korral kasutatakse külma vee ekstrakti. Keetmiseks ja kuumfiltrimiseks ettenähtud paber- ja pappmaterjalide korral kasutatakse kuuma vee ekstrakti.</p>	<p>Scope:</p>
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ICS 67.250, 85.060

Võtmesõnad:

English version

**Paper and board intended to come into contact with foodstuffs -
Determination of formaldehyde in an aqueous extract**

Papiers et cartons destinés à entrer en contact avec les
denrées alimentaires - Détermination du formaldéhyde
dans un extrait aqueux

Papier und Pappe vorgesehen für den Kontakt mit
Lebensmitteln - Bestimmung von Formaldehyd in einem
wässrigen Extrakt

This European Standard was approved by CEN on 19 February 2001.

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 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 Management Centre has the same status as the official versions.

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



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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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 October 2001, and conflicting national standards shall be withdrawn at the latest by October 2001.

This European Standard supersedes EN 1541:1998.

With regard to EN 1541 : 1998-06 and EN 1541 : 1998/AC the following changes have been made:

- a) deletion of the Butan-1-ol step;
- b) correction of the formula 2 by incorporation of EN 1541 : 1998/AC;
- c) addition of more precise information on the reproducibility, see 11.2;
- d) 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 the determination of formaldehyde in aqueous extracts prepared from paper and board intended to come into contact with foodstuffs. The limit of determination is 1 mg/kg. This means that for a paper with a grammage of 100 g/m² the limit of determination will be 0,001 mg/dm².

For contact at room temperature the cold water extract is applied. For paper and board materials intended for boiling and hot filtering purposes the hot water extract is applied.

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

3 Terms and definitions

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

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

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

4 Principle

Formaldehyde reacts with pentane-2,4-dione (acetylacetone) in the presence of ammonium acetate to form 3,5-diacetyl-1,4-dihydrolutidine. The absorbance of the extract is measured at a wavelength of 410 nm.

NOTE The extract should also be scanned by ultraviolet (UV) spectroscopy for confirmation where the level of formaldehyde exceeds specified limits (see clause 10).

5 Reagents

All reagents shall be of analytical grade and the water shall be distilled or of equivalent purity.

5.1 Anhydrous ammonium acetate

5.2 Acetic acid 99% (*d* = 1,05)

5.3 Pentane-2,4-dione

5.4 Hydrochloric acid, 1 mol/l

5.5 Sodium hydroxide solution, 1 mol/l

5.6 Starch solution freshly prepared, 2 g/l

5.7 Formaldehyde solution, 370 g/l to 400 g/l

5.8 Standard iodine solution, 0,05 mol/l

5.9 Standard sodium thiosulphate solution, 0,1 mol/l

5.10 Pentane-2,4-dione reagent

In a 100,0 ml volumetric flask dissolve:

- 15,0 g anhydrous ammonium acetate (see 5.1);
- 0,2 ml pentane-2,4-dione (see 5.3);
- 0,3 ml acetic acid (see 5.2);
- 25 ml of water.

Make up to 100,0 ml with water. This reagent shall be freshly prepared.

5.11 Reagent (see 5.10) without pentane-2,4-dione