

**Materials and articles in contact with
foodstuffs - Plastics - Part 3: Test
methods for overall migration into
aqueous food simulants by total
immersion**

Materials and articles in contact with foodstuffs -
Plastics - Part 3: Test methods for overall migration
into aqueous food simulants by total immersion

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1186-3:2002 sisaldab Euroopa standardi EN 1186-3:2002 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 16.05.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1186-3:2002 consists of the English text of the European standard EN 1186-3:2002.</p> <p>This document is endorsed on 16.05.2002 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:</p> <p>This Part of this European Standard specifies test methods for the determination of the overall migration into aqueous based food simulants from plastics which are intended to come into contact with foodstuffs, by total immersion of test specimens in a selected food simulant at test temperatures up to reflux for selected test times. This method is most suitable for plastics in the form of films and sheets, but can be applied to a wide range of articles or containers from which test pieces of suitable size can be cut.</p>	<p>Scope:</p> <p>This Part of this European Standard specifies test methods for the determination of the overall migration into aqueous based food simulants from plastics which are intended to come into contact with foodstuffs, by total immersion of test specimens in a selected food simulant at test temperatures up to reflux for selected test times. This method is most suitable for plastics in the form of films and sheets, but can be applied to a wide range of articles or containers from which test pieces of suitable size can be cut.</p>
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Võtmesõnad: aqueous, containers, food packages, food products, food-container c, immersion, immersion tests, liquid materials, materials, materials in contact with food, materials specification, migration, objects, plastic containers, plastics, simulation, testing

Hinnagrupp J

English version

**Materials and articles in contact with foodstuffs - Plastics - Part
3: Test methods for overall migration into aqueous food
simulants by total immersion**

Matériaux et objets en contact avec les denrées
alimentaires - Matière plastique - Partie 3: Méthodes
d'essai pour la migration globale dans l'huile d'olive par
immersion totale

Werkstoffe und Gegenstände in Kontakt mit Lebensmitteln
- Kunststoffe - Teil 3: Prüfverfahren für die
Gesamtmigration in wässrige Prüflbensmittel durch
völliges Eintauchen

This European Standard was approved by CEN on 4 January 2002.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document EN 1186-3:2002 has been prepared by Technical Committee CEN/TC 194 "Utensils in contact with food", the secretariat of which is held by BSI.

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 2002, and conflicting national standards shall be withdrawn at the latest by October 2002.

This document supersedes ENV 1186-3:1994.

This European Standard is one of a series of methods of test for plastics materials and articles in contact with foodstuffs.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

For relationship with EC Directive(s), see informative annex ZA, which is an integral part of this document.

At the time of preparation and publication of this standard the European Union legislation relating to plastics materials and articles intended to come into contact with foodstuffs is incomplete. Further Directives and amendments to existing Directives are expected which could change the legislative requirements which this standard supports. It is therefore strongly recommended that users of this standard refer to the latest relevant published Directive(s) before commencement of any of the test or tests described in this standard.

EN 1186-3 should be read in conjunction with EN 1186-1.

Further Parts of this standard have been prepared concerned with the determination of overall migration from plastics materials into food simulants.

Their titles are as follows:

EN 1186 - Materials and articles in contact with foodstuffs - Plastics –

Part 1	Guide to the selection of conditions and test methods for overall migration
Part 2	Test methods for overall migration into olive oil simulants by total immersion
Part 4	Test methods for overall migration into olive oil by cell
Part 5	Test methods for overall migration into aqueous food simulants by cell
Part 6	Test methods for overall migration into olive oil using a pouch
Part 7	Test methods for overall migration into aqueous food simulants using a pouch
Part 8	Test methods for overall migration into olive oil by article filling
Part 9	Test methods for overall migration into aqueous food simulants by article filling
Part 10	Test methods for overall migration into olive oil (modified method for use in cases where incomplete extraction of olive oil occurs)
Part 11	Test methods for overall migration into mixtures of ¹⁴ C-labelled synthetic triglyceride

Part 12	Test methods for overall migration at low temperatures
Part 13	Test methods for overall migration at high temperatures
Part 14	Test methods for 'substitute tests' for overall migration from plastics intended to come into contact with fatty foodstuffs using test media iso-octane and 95 % ethanol
Part 15	Alternative test methods to migration into fatty food simulants by rapid extraction into iso-octane and/or 95 % ethanol

Annex A is informative.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This Part of this European Standard specifies test methods for the determination of the overall migration into aqueous based food simulants from plastics which are intended to come into contact with foodstuffs, by total immersion of test specimens in a selected food simulant at test temperatures up to reflux for selected test times.

This method is most suitable for plastics in the form of films and sheets, but can be applied to a wide range of articles or containers from which test pieces of suitable size can be cut.

2 Normative references

This European Standard incorporates by dated and 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 and 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 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 10088-1:1995, *Stainless steels - Part 1: List of stainless steels*.

EN ISO 8442-2:1997, *Materials and articles in contact with foodstuffs – Cutlery and table holloware – Part 2: Requirements for stainless steel and silver-plated cutlery (ISO 8442-2:1997)*.

ISO 4788, *Laboratory glassware - Graduated measuring cylinders*.

3 Method A - overall migration into aqueous food simulants by total immersion in an oven or incubator or refrigerator

3.1 Principle

The overall migration of non-volatile substances from a sample of the plastics is determined as the mass of non-volatile residue after evaporation of the food simulant following immersion.

The selection of the conditions of test and the food simulant(s) shall be determined by the conditions of use; see clauses 4, 5 and 6 of EN 1186-1:2002.

Test specimens of approximately 1 dm², see clause 8 of EN 1186-1:2002, are immersed in the food simulant for the exposure time at temperatures up to and including the temperature of reflux. At the end of the test period, each test specimen is removed from the food simulant. The food simulant from each test specimen is evaporated to dryness, the mass of the non-volatile residue is determined gravimetrically and expressed as milligrams per square decimetre of surface area of test specimen.

Overall migration is reported as the mean of three determinations on separate test specimens.

3.2 Reagents

NOTE For details of preparation and quality of these reagents, see clause 4 of EN 1186-1:2002.

3.2.1 Distilled water or water of equivalent quality (simulant A)

3.2.2 Acetic acid 3 % (w/v) in aqueous solution (simulant B)

3.2.3 Ethanol 10 % (v/v) in aqueous solution (simulant C)