Irish Standard
I.S. EN ISO 17304:2013

Dentistry - Polymerization shrinkage: Method for determination of polymerization shrinkage of polymer-based restorative materials (ISO 17304:2013)

I.S. EN ISO 17304:2013

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Dentistry - Polymerization shrinkage: Method for determination of polymerization shrinkage of polymer-based restorative materials (ISO 17304:2013)

Médecine bucco-dentaire - Rétraction à la polymérisation: Méthode de détermination de la rétraction à la polymérisation des matériaux de restauration à base de polymères (ISO 17304:2013)

Zahnheilkunde - Polymerisationsschrumpfung: Verfahren zur Bestimmung der Polymerisationsschrumpfung von polymerbasierenden Restaurationsmaterialien (ISO 17304:2013)

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN ISO 17304:2013) has been prepared by Technical Committee ISO/TC 106 “Dentistry” in collaboration with Technical Committee CEN/TC 55 “Dentistry” 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of an identical text or by endorsement, at the latest by June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.

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The text of ISO 17304:2013 has been approved by CEN as EN ISO 17304:2013 without any modification.

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I.S. EN ISO 17304:2013

INTERNATIONAL STANDARD

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Dentistry — Polymerization shrinkage: Method for determination of polymerization shrinkage of polymer-based restorative materials

Médecine bucco-dentaire — Rétraction à la polymérisation: Méthode de détermination de la rétraction à la polymérisation des matériaux de restauration à base de polymères

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives.

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The committee responsible for this document is ISO/TC 106, *Dentistry*, Subcommittee SC 1, *Filling and restorative materials*.

Introduction

This International Standard specifies a test method for the determination of the polymerization shrinkage of external energy-activated polymer-based restorative materials of Class 2, Group 1 (see ISO 4049) and similar core materials.

Many test methods have been used over many years to determine this property but no International Standard test has so far been adopted. The method specified herein is a simple method that provides reproducible results that will aid users in the comparison of test data. It was developed and verified by a comprehensive interlaboratory test programme comparing it with other methods.

Dentistry — Polymerization shrinkage: Method for determination of polymerization shrinkage of polymer-based restorative materials

1 Scope

This International Standard specifies a test method for the measurement of the polymerization shrinkage of external energy-activated polymer-based restorative materials such as composites and core materials.

The method is not suitable for Class 1 (self-curing, see ISO 4049) polymer-based restorative materials.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pyknometer method and titration method*

ISO 1942, *Dentistry — Vocabulary*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 4049, *Dentistry — Polymer-based restorative materials*

ISO 10650 (all parts), *Dentistry — Powered polymerization activators*

3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 1183-1, ISO 1942, ISO 4049, and the following apply.

3.1
high-viscosity materials
polymer-based restorative materials having little flow so that they hold their shape on moulding

3.2
flowable materials
polymer-based restorative materials having low viscosity so that they do not hold their shape on moulding

4 Test method

4.1 Principle

The polymerization shrinkage of external energy-activated polymer-based restorative materials is determined using density determinations in accordance with the buoyancy method (Archimedes' principle). This test method accords with method A (immersion method), described in general terms in ISO 1183-1.

Ensure that test conditions such as temperature, duration of exposure, and distance between light guide and the test specimen are controlled and reproducible. Pre-test storage conditions of the polymer prior to its measurement are also specified to ensure the maximum achievable polymerization in the test