



**SLOVENSKI STANDARD**  
**SIST EN ISO 4049:2019**

**01-september-2019**

**Nadomešča:**

**SIST EN ISO 4049:2010**

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**Zobozdravstvo - Materiali za obnovo zob na osnovi polimerov (ISO 4049:2019)**

Dentistry - Polymer-based restorative materials (ISO 4049:2019)

Zahnheilkunde - Polymerbasierende Restaurationswerkstoffe (ISO 4049:2019)

Art dentaire - Produits de restauration à base de polymères (ISO 4049:2019)

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**ICS:**

11.060.10      Zobotehnični materiali      Dental materials

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EUROPEAN STANDARD

EN ISO 4049

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

## Dentistry - Polymer-based restorative materials (ISO 4049:2019)

Médecine bucco-dentaire - Produits de restauration à base de polymères (ISO 4049:2019)

Zahnheilkunde - Polymerbasierende Restorationswerkstoffe (ISO 4049:2019)

This European Standard was approved by CEN on 18 May 2019.

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## European foreword

This document (EN ISO 4049:2019) 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of an identical text or by endorsement, at the latest by December 2019, and conflicting national standards shall be withdrawn at the latest by December 2019.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.

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Fifth edition  
2019-05

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**Dentistry — Polymer-based  
restorative materials**

*Médecine bucco-dentaire — Produits 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 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 1, *Filling and restorative materials*.

This fifth edition cancels and replaces the fourth edition (ISO 4049:2009), which has been technically revised. The main changes compared to the previous edition are as follows:

- the test for sensitivity to ambient light has been changed because a filter used in the current test was not available;
- the test for radio-opacity has been updated to refer to ISO 13116;
- luting materials no longer have to conform to the requirement for depth of cure;
- the manufacturer is now required to publish details of material composition, see [Clause 8](#);
- several minor changes have been made to clarify content together with editorial changes.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

**ISO 4049:2019(E)****Introduction**

Specific qualitative and quantitative requirements for freedom from biological hazard are not included in this document. It is recommended, however, that reference should be made to ISO 10993-1 and ISO 7405 when assessing possible biological or toxicological hazards.

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# Dentistry — Polymer-based restorative materials

## 1 Scope

This document specifies requirements for dental polymer-based restorative materials supplied in a form suitable for mechanical mixing, hand-mixing, or intra-oral and extra-oral external energy activation, and intended for use primarily for the direct or indirect restoration of the teeth and for luting.

The polymer-based luting materials covered by this document are intended for use in the cementation or fixation of restorations and appliances such as inlays, onlays, veneers, crowns and bridges. This document does not cover those polymer-based luting materials that have an adhesive component within the structure of the material (see ISO/TS 16506).

The document does not cover polymer-based materials intended to prevent caries (see ISO 6874), core materials or those used for veneering metal sub-frames (see ISO 10477).

## 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.

ISO 1942, *Dentistry — Vocabulary* (standards.iteh.ai)

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

ISO 7491:2000, *Dental materials — Determination of colour stability*

ISO 8601-1:2019, *Date and time — Representations for information interchange Part — 1: Basic rules*

ISO 8601-2:2019, *Date and time — Representations for information interchange Part — 2: Extensions*

ISO 13116:2014, *Dentistry — Test method for determining radio-opacity of materials*

ISO 17304:2013, *Dentistry — Polymerization shrinkage: Method for determination of polymerization shrinkage of polymer-based materials*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1942 and the following apply.

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

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

### 3.1

#### opaque

shade of an intensely pigmented polymer-based restorative material of low translucency

### 3.2

#### outer pack

form of packaging used to combine a number of single dose containers or capsules