SLOVENSKI STANDARD
SIST EN 27491:2000

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Dentistry - Dental materials - Determination of colour stability of dental polymeric materials (ISO 7491:1985)

Dentistry - Dental materials - Determination of colour stability of dental polymeric materials (ISO 7491:1985)

Zahnheilkunde - Zahnärztliche Werkstoffe - Bestimmung der Farbbeständigkeit bei zahnärztlichen Kunststoffen (ISO 7491:1985)

Art dentaire - Produits dentaires - Détermination de la stabilité de couleur des produits dentaires a base de polymeres (ISO 7491:1985)

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English version

Dentistry - Dental materials - Determination of colour stability of dental polymeric materials (ISO 7491:1985)

Art dentaire - Produits dentaires - Détermination de la stabilité de couleur des produits dentaires à base de polymères (ISO 7491:1985)

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This European Standard was approved by CEN on 1991-07-23 and is identical to the ISO standard as referred to.
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard has been taken over by CEN/TC 55 "Dental products" from the work of ISO/TC 106 "Dentistry" of the International Organization for Standardization (ISO).

CEN/TC 55 decided to submit this document to the CEN members for voting by the Unique Acceptance Procedure (UAP). The result was postive.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 7491:1985 was approved by CEN as a European Standard without any modification.

International Standard 7491

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Dental materials — Determination of colour stability of dental polymeric materials

Produits dentaires — Détermination de la stabilité de couleur des produits dentaires 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7491 was prepared by Technical Committee ISO/TC 106, *Dentistry*.

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Dental materials — Determination of colour stability of dental polymeric materials

0 Introduction

Colour stability is an important characteristic of dental polymeric materials and it is expected that the test methods in this International Standard will be referred to in the International Standards specifying those materials.

1 Scope and field of application

This International Standard specifies a method for the determination of the colour stability of dental polymeric materials.

2 References

ISO 4892, *Plastics — Methods of exposure to laboratory light sources.*

CIE Publication 15, *Colorimetry.*

3 Method of test

3.1 Apparatus

3.1.1 Radiation source

Xenon lamp with a colour temperature of 5 000 to 7 000 K and with an illuminance at the specimen of 150 000 lux. Any deviation of the illuminance from the mean value at any given moment shall not exceed ± 10 % over the entire area occupied by the test specimen (see ISO 4892).

Other radiation sources of equivalent performance to the xenon are also suitable.

NOTE — The xenon lamp and the filters (3.1.2) should normally be replaced after 1 500 h use because of the change of radiation intensity due to ageing. The illuminance output should be calibrated with a suitable light measuring instrument such as the Hanau instrument.

3.1.2 Filters

3.1.2.1 Ultraviolet filter: Borosilicate glass filter with transmittance of less than 1 % below 300 nm and greater than 90 % above 370 nm.

3.1.2.2 Heat filter, such that the temperature recorded with the filter in position will not exceed 55 °C when measured by a black panel thermometer (see the note), or a mercury thermometer with a blackened bulb, mounted in the position normally occupied by the test specimen.

NOTE — The black panel thermometer consists of a 0,9 ± 0,1 mm thick steel panel the size of one specimen and finished with a black glossy enamel having good resistance to light. A means for measuring the temperature of the panel is provided at the centre; a thermocouple or bimetallic thermometer making intimate contact with the panel is suitable.

3.1.3 Test chamber

The test chamber comprises the following components.

3.1.3.1 Trough of circulating water, maintained at 37 ± 5 °C.

The water level is maintained at 10 ± 5 mm above the specimens and the specimens are held parallel to the bottom of the chamber.

3.1.3.2 Specimen holder.

A suitable holder for discs up to 50 mm diameter is shown in the figure.

3.2 Procedure

3.2.1 Radiation test

Either clamp the specimen discs with half of each one in the holder as shown in the figure or cover one half of each specimen with tin or aluminium foil. For specimen teeth, cover half of the vestibular surface with tin or aluminium foil parallel to the long axis of the tooth.

With the filters (3.1.2) in position, expose the test specimens in the water bath to the radiation of the xenon lamp (3.1.1) for 24 h. Take care to avoid casting shadows on the specimens.

3.2.2 Colour comparison

Store an unradiated specimen under de-ionized water for 24 h before comparing with the exposed specimens.

Dimensions in millimetres

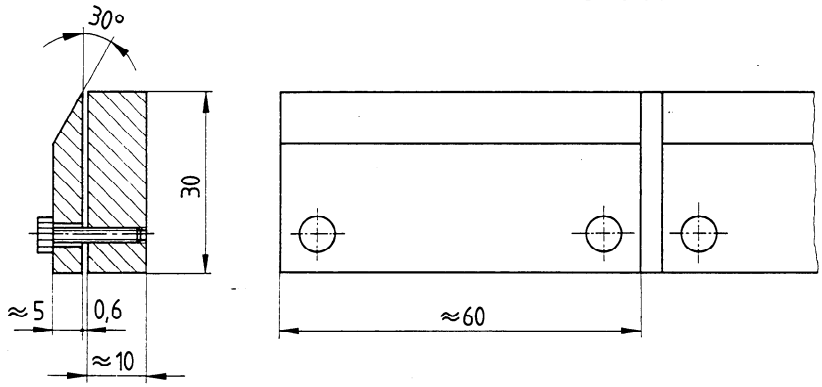

Figure — Holder for specimen discs up to 50 mm diameter

Use three people with normal colour vision to compare by visual inspection the exposed and unexposed half of each of the specimens and the unradiated specimen for any colour differences. Make the comparison in bright diffuse daylight under an overcast "northern/southern" sky or alternatively, under the xenon or equivalent lamp corresponding to D65 (see CIE Publication 15) without any significant coloured reflection using a minimum illuminance of 1 000 lux.

For specimen discs, place a diffuse white background of reflectance 90 % (white bondpaper is suitable) behind the sample.

Limit the background to the size of the disc and surround it by a diffuse black background (felt or velvet is suitable).

For tooth shaped specimens use a diffuse black background such as felt or velvet.

Allow the three observers to view the specimens for a period of not longer than 2 s.

Record the mean of the independent comparisons of the three observers.