
Zobozdravstvo - Keramični polizdelki, ki jih je mogoče obdelovati (ISO 18675:2022)

Dentistry - Machinable ceramic blanks (ISO 18675:2022)

Zahnheilkunde - Maschinierbare Keramikblanks (ISO 18675:2022)

Médecine bucco-dentaire - Ébauches en céramique usinables (ISO 18675:2022)

Ta slovenski standard je istoveten z: EN ISO 18675:2022

<https://standards.iteh.ai/catalog/standards/sist/67fad969-46c6-4b35-b3e9-cd5338a9776d/sist-en-iso-18675-2023>

ICS:

| | | |
|-----------|------------------------|------------------|
| 11.060.10 | Zobotehnični materiali | Dental materials |
|-----------|------------------------|------------------|

SIST EN ISO 18675:2023

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 18675

December 2022

ICS 11.060.10

English Version

Dentistry - Machinable ceramic blanks (ISO 18675:2022)

Médecine bucco-dentaire - Ébauches en céramique
usinables (ISO 18675:2022)

Zahnheilkunde - Maschinierbare Keramikblanks (ISO
18675:2022)

This European Standard was approved by CEN on 11 December 2022.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

[SIST EN ISO 18675:2023](https://standards.iteh.ai/catalog/standards/sist/67fad969-46c6-4b35-b3e9-cd5338a9776d/sist-en-iso-18675-2023)

<https://standards.iteh.ai/catalog/standards/sist/67fad969-46c6-4b35-b3e9-cd5338a9776d/sist-en-iso-18675-2023>



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

| Contents | Page |
|------------------------|------|
| European foreword..... | 3 |

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 18675:2023

<https://standards.iteh.ai/catalog/standards/sist/67fad969-46c6-4b35-b3e9-cd5338a9776d/sist-en-iso-18675-2023>

European foreword

The text of ISO 18675:2022 has been prepared by Technical Committee ISO/TC 106 "Dentistry" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 18675:2022 by 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 2023, and conflicting national standards shall be withdrawn at the latest by June 2023.

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.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 18675:2022 has been approved by CEN as EN ISO 18675:2022 without any modification.

<https://standards.iteh.ai/catalog/standards/sist/67fad969-46c6-4b35-b3e9-cd5338a9776d/sist-en-iso-18675-2023>

INTERNATIONAL STANDARD

ISO
18675

First edition
2022-05

Dentistry — Machinable ceramic blanks

Médecine bucco-dentaire — Ébauches en céramique usinables

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 18675:2023

<https://standards.iteh.ai/catalog/standards/sist/67fad969-46c6-4b35-b3e9-cd5338a9776d/sist-en-iso-18675-2023>



Reference number
ISO 18675:2022(E)

© ISO 2022

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 18675:2023

<https://standards.iteh.ai/catalog/standards/sist/67fad969-46c6-4b35-b3e9-cd5338a9776d/sist-en-iso-18675-2023>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

| | |
|--------------------------------------------------------------------------------------|-----------|
| Foreword | iv |
| Introduction | v |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 1 |
| 3.1 Materials | 1 |
| 3.2 Properties | 2 |
| 3.3 Types of blanks | 2 |
| 3.4 Test piece | 2 |
| 4 Homogeneity of partially sintered zirconia blanks | 3 |
| 4.1 Classification | 3 |
| 4.2 Determination of the shrinkage factor, d | 3 |
| 4.2.1 Blanks characterized by one shrinkage factor for all three dimensions in space | 3 |
| 4.2.2 Blanks characterized by two or three shrinkage factors | 5 |
| 4.3 Recommendations | 6 |
| 4.4 Test report | 6 |
| 5 Warpage | 7 |
| 5.1 Test method | 7 |
| 5.1.1 Large zirconia blanks | 7 |
| 5.1.2 Medium- and small-size zirconia blanks | 8 |
| 5.2 Recommendations | 8 |
| 5.3 Test report | 9 |
| 6 Dimensional stability post machining crystallization of glass ceramics | 9 |
| 6.1 General | 9 |
| 6.2 Test method | 9 |
| 6.2.1 Sample preparation | 9 |
| 6.2.2 Characterization before heat treatment | 10 |
| 6.2.3 Heat treatment | 11 |
| 6.2.4 Characterization after heat treatment | 11 |
| 6.3 Test report | 12 |
| 7 Machining damage | 13 |
| 7.1 General | 13 |
| 7.2 Test methods | 13 |
| 7.3 Test report | 13 |
| 8 Machinability using the merlon fracture test | 14 |
| 8.1 General | 14 |
| 8.2 Test method | 15 |
| 8.2.1 Dimensions of test geometries | 15 |
| 8.2.2 Machining | 16 |
| 8.2.3 Characterization of milled specimen | 16 |
| 8.3 Recommendations | 17 |
| 8.4 Test report | 17 |
| Bibliography | 19 |

ISO 18675:2022(E)

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).

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).

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

For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 9, *Dental CAD/CAM systems*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 55, *Dentistry*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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.

Introduction

A variety of ceramic blank materials are being used in machining systems for fabrication of various restorations. Although all these materials can have different chemical and microstructural makeup, there are some unique and common concerns for machining and performance of these materials. Machining damage, minimum machined thickness, and machining tolerances all are common concerns for these materials.

The overwhelming use of zirconia and alumina is in the form of green or partially sintered blanks with shrinkage values of 20 % to 35 % by volume when sintered to full density. In order for the restoration to be fabricated with proper accuracy, the blank density should be carefully measured and conveyed to the computer controlled milling unit. This allows for proper oversizing and shrinkage to provide an accurate fit. Furthermore, the blank should be homogeneous throughout the body, otherwise differential shrinkage occurs resulting in significant warping and departure from linearity.

With respect to glass ceramics, a subset requires crystallization post-machining during which distortion can occur placing the machined part out of the tolerance specified for the restoration. Also, another subset is machined in the crystallized state that can cause significant machining damage affecting the properties of the material.

The machining process can cause surface and subsurface damage that can decrease the flexural strength of the material. Furthermore, damage can limit the minimum thickness of the material that can be achieved with the machining process and affect the accuracy of the final part with respect to the original designed dimensions.

This document provides guidance for evaluating the effects of machining on ceramic materials, the dimensional changes occurring after crystallization and after sintering, and assessing machining damage.

Specific qualitative and quantitative recommendations for freedom from biological hazard are not included in this document, however when assessing possible biological or toxicological hazards, reference should be made to ISO 10993-1 and ISO 7405. Basic material properties are not included in this document, however when assessing material properties, reference should be made to ISO 6872.

