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Dentistry — Test methods for machining accuracy of computer-aided milling machines

Médecine bucco-dentaire — Méthodes d'essai pour l'exactitude d'usinage des fraiseuses à commande numérique

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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.

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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.

This document was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 9, *Dental CAD/CAD systems*.

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Introduction

Dental CAD/CAM systems have been successfully used for the fabrication of indirect dental restorations such as inlays, crowns and bridges. The accuracy of these restorations is one of the most important factors for their clinical success. This document provides standardized test methods to evaluate the machining accuracy of computer-aided milling machines which are used as a part of dental CAD/CAM systems and the information to be provided by the manufacturer. A flow chart of test method is shown in Annex A.

There is another method to evaluate accuracy of the target restoration(s) using coordinate measuring machine (CMM) and software. Test methods using CMM are shown in Annex B.

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Dentistry — Test methods for machining accuracy of computer-aided milling machines

1 Scope

This document specifies the test methods to evaluate the machining accuracy of computer-aided milling machines as a part of dental CAD/CAM systems, which fabricate dental restorations, e.g. inlays, crowns and bridges.

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*

ISO 18739, *Dentistry — Vocabulary of process chain for CAD/CAM systems*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1942, ISO 18739 and the following apply.

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
computer-aided milling machine
computer-aided machining device designed for subtractive manufacturing of dental prostheses using rotary instruments for cutting and grinding

4 Recommendations

The accuracy of target restoration(s) should be evaluated using the test methods described in Clause 5. The test method and its results should be provided in the instruction for use, the technical manual or other means. When the machining accuracy is affected by the material, appropriate material(s) should be tested. Testing should be performed on each material type that the manufacturer indicates for use by the device.

5 Test methods

5.1 Target restorations

Three types of restorations, a) Class II inlay, b) crown and c) four-unit bridge, are the targets of this document. Choose the type(s) following the applicable restoration(s) specified by the manufacturer. If any of the three restorations is not specified as applicable by the manufacturer, this restoration

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