Irish Standard
I.S. EN ISO 13078:2013

Dentistry - Dental furnace - Test method for temperature measurement with separate thermocouple (ISO 13078:2013)

I.S. EN ISO 13078:2013

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English Version

Dentistry - Dental furnace - Test method for temperature measurement with separate thermocouple (ISO 13078:2013)

Médecine bucco-dentaire - Four dentaire - Méthode d'essai pour le mesurage de la température au moyen d'un thermocouple (ISO 13078:2013)

Zahnheilkunde - Brennofen - Prüfverfahren für die Temperaturmessung mit separatem Thermoelement (ISO 13078:2013)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN ISO 13078:2013) 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of an identical text or by endorsement, at the latest by August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

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The text of ISO 13078:2013 has been approved by CEN as EN ISO 13078:2013 without any modification.

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I.S. EN ISO 13078:2013

INTERNATIONAL STANDARD

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Dentistry — Dental furnace — Test method for temperature measurement with separate thermocouple

Médecine bucco-dentaire — Four dentaire — Méthode d'essai pour le mesurage de la température au moyen d'un thermocouple

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 13078 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 2, *Prosthodontic materials*.

Introduction

Dental furnaces are suitable for the manufacturing of metal-ceramic and all-ceramic restorations for use in dentistry. Dental furnaces are particularly used for firing or sintering, respectively, of dental opaques, dentine and enamel materials to the respective compatible substructure materials. Dental furnaces are also used for other applications such as oxidizing metallic substructures in preparation for porcelain firing, for melting pressable ceramics, for stain and glaze firing, etc. According to the current state of the art, the temperature of this process lies between 600 °C and 1 050 °C.

The firing result obtained is influenced by the accuracy of the actual temperature, which may be influenced by the different calibration processes applied by the manufacturers of dental furnaces as well as by the varying construction types of the dental furnaces currently on the market.

Despite the fact that different dental furnaces can have identical digital external displays, different results regarding the degree of firing can be identified when processing the same ceramics under otherwise similar conditions.

A different degree of firing does not only cause differences that can be judged directly by the human eye (e. g. colour and transparency), but also deviations that cannot be detected by eye. These are for instance the coefficient of thermal expansion, strength, and solubility of the dental opaque, dentine or enamel materials, and the bonding strength to its substructure. Such changes may result in clinical failures (e. g. fractures) as well as discoloration and changed aesthetics of the dental ceramic restoration.

This International Standard levels the currently existing differences between the final calibration of the dental furnaces based on the factory of origin through a final adjustment (that has to be carried out by all manufacturers in an identical way) of the temperature control in the firing chamber by means of a thermocouple at e.g. 800 °C.

Alternatively, the verification of the process can be carried out using the thermocouple at 700 °C or 900 °C.