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NSAI Standards

Irish Standard
I.S. EN ISO 19448:2018

Dentistry - Analysis of Fluoride Concentration in Aqueous Solutions by use of Fluoride-Ion Selective Electrode (ISO 19448:2018)

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National Foreword

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 19448

January 2018

ICS 71.100.70

English Version

Dentistry - Analysis of Fluoride Concentration in Aqueous Solutions by use of Fluoride-Ion Selective Electrode (ISO 19448:2018)

Médecine bucco-dentaire - Analyse de la concentration en fluorure dans les solutions aqueuses à l'aide d'une électrode sélective d'ions fluorures (ISO 19448:2018)

Zahnheilkunde - Analyse der Fluoridkonzentration in wässrigen Lösungen mit einer fluoridionenselektiven Elektrode (ISO 19448:2018)

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European Foreword

This document (EN ISO 19448:2018) 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of an identical text or by endorsement, at the latest by July 2018, and conflicting national standards shall be withdrawn at the latest by July 2018.

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INTERNATIONAL STANDARD

ISO 19448

First edition
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Dentistry — Analysis of fluoride concentration in aqueous solutions by use of fluoride ion-selective electrode

Médecine bucco-dentaire — Analyse de la concentration en fluorure dans les solutions aqueuses en utilisant une électrode sélective des ions fluorures

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Foreword

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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).

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This document was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 7, *Oral care products*.

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Introduction

Fluoride is used in dentistry primarily for caries prevention. Fluoride is the active ingredient for caries prevention in many dental products such as dentifrices, gels, oral rinses, and fluoride releasing varnishes. The fluoride concentration in these products is an integral part of other standards where the product is intended to be analysed for fluoride content. This document provides methods based on the use of fluoride ion-selective electrode technology for the analysis of the total fluoride content in aqueous samples. The methods describe uses for fluoride ion-selective electrode technology and anticipate that the sample-specific preparations such as digestion, distillation, etc. have been described in the standards specific to product types.

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Dentistry — Analysis of fluoride concentration in aqueous solutions by use of fluoride ion-selective electrode

1 Scope

This document specifies test methods for the quantification of fluoride concentrations in dental products including dentifrices, gels, oral rinses, fluoride releasing varnishes, and other fluoride containing products. The methods are based on fluoride ion-selective electrode technology for the analysis of fluoride in aqueous samples derived from dental products.

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 78-2, *Chemistry — Layouts for standards — Part 2: Methods of chemical analysis*

ISO 835, *Laboratory glassware — Graduated pipettes*

ISO 1942, *Dentistry — Vocabulary*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 78-2 and ISO 1942 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 https://www.iso.org/obp

4 Principle

This test method covers the determination of fluoride concentration in aqueous solutions derived from dental products. The following test methods are presupposed to use fluoride ion-selective electrodes (F-ISE) .

The sensing element of the fluoride ion-selective electrode consists of a single crystal of europium (II)-doped lanthanum fluoride, LaF_3. When the sensing element is in contact with a solution containing fluoride ions, an electrode potential develops across the sensing element. This potential, which depends on the activity of free fluoride ion in solution $\{F^-\}$, is measured against a constant reference electrode potential with a digital pH/mV meter or ISE (concentration) potentiometer. A potential (E) is developed which is proportional to the logarithm of the activity of the fluoride ion $\{F^-\}$ in solution following the Nernst Equation.

$$E = E_0 + S * \log \{F^-\} \quad (1)$$

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