

TECHNICAL SPECIFICATION

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Dentistry — Corrosion tests for amalgam

Art dentaire — Essais de corrosion des amalgames



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Foreword

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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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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.

ISO/TS 17576 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 1, *Filling and restorative materials*.

Introduction

The development of this Technical Specification is the result of worldwide demand for test methods to determine acceptability of dental amalgams for oral restorations in relation to corrosion and mercury vapour.

The test methods described in ISO 10271 are intended for dental metallic materials and are not suitable for amalgams, due to the risk of formation of precipitates during the test. Furthermore, ISO 10271 does not cover measurement of mercury vapour liberated during corrosion of amalgam.

Dentistry — Corrosion tests for amalgam

1 Scope

This Technical Specification provides two test methods and concomitant protocols to determine the corrosive behaviour of dental amalgams and their tendency to release mercury vapour during corrosion. The methods measure 1) the integrated current in a potentiostatic corrosion test and 2) the amount of released ions and mercury vapour in a static immersion test.

This Technical Specification is not intended to set limits for the relevant parameters in the two tests described.

2 Normative references

The following referenced documents are indispensable for the application 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 1559:1995, *Dental materials — Alloys for dental amalgam*

ISO 3585:1998, *Borosilicate glass 3.3 — Properties*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 10271:2001, *Dental metallic materials — Corrosion test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

amalgam

alloy of mercury with one or more other metals

3.2

corrosion

deterioration of an amalgam by chemical or electrochemical reaction with its environment

NOTE This deterioration is manifest in the loss in mass of the amalgam, with a release of constituent elements or the formation of an adherent film of reaction products.

3.3

electrolyte

liquid that contains ions whose combination allows the conduction of electricity

3.4

immersion test

test in which the sample is exposed to a corrosive solution without application of variable mechanical stresses to the sample

3.5

potentiostatic test

test in which the electrode potential is kept constant