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**Dentistry — Determination of the  
strength of dental amalgam by the  
Hertzian indentation strength (HIT)  
method**

*Médecine bucco-dentaire — Détermination de la résistance des  
amalgames dentaire par l'indentation hertzienne (HIT) méthode*



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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.

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](http://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](http://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 on 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](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/TC 106, *Dentistry*, Subcommittee SC 1, *Filling and restorative materials*.

## Introduction

This document gives the practical details of the test method for the measurement of the strength of a dental amalgam by the Hertzian indentation (HIT) method. In this test, the specimen geometry and the localized application of force leads to radial crack formation at the surface opposite the one to which the force is applied and under the point at which it is applied. This protocol produces a loading condition similar to that encountered during normal oral function.

When a requirement is agreed, it is the intention of ISO/TC 106/SC 1 to consider the inclusion of this test procedure in the ISO standards for dental amalgam.

This method for measuring the strength of a brittle material (and materials that have very low plasticity) can be applied to other dental restorative materials.



# Dentistry — Determination of the strength of dental amalgam by the Hertzian indentation strength (HIT) method

## 1 Scope

This document gives the practical details of the test method for the measurement of the strength of a dental amalgam by the Hertzian indentation strength test (HIT) method.

It is applicable to dental amalgam formed from products that are within the scope of ISO 24234 and ISO 20749.

## 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 6344-1, *Coated abrasives — Grain size analysis — Part 1: Grain size distribution test*

ISO 7488, *Dental amalgamators*

ISO 13565-2, *Geometrical Product Specifications (GPS) — Surface texture: Profile method; Surfaces having stratified functional properties — Part 2: Height characterization using the linear material ratio curve*

ISO 13897, *Dentistry — Amalgam capsules*

ISO 24234, *Dentistry — Dental amalgam*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1942 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

#### **dental amalgam alloy**

alloy in fine particles, composed mainly of silver, tin and copper, which, when mixed with *dental mercury* (3.2), produces a dental amalgam

### 3.2

#### **dental mercury**

mercury supplied for use in the preparation of dental amalgam