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# Dentistry — Casting and baseplate waxes

*Médecine bucco-dentaire — Cires pour coulée et pour plaque de base*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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).

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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 2, *Prosthodontic materials,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 55, *Dentistry,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 15854:2021), which has been technically revised.

The main changes compared with the previous edition are as follows:

— the scope has been clarified;

— waxes supplied for use in CAD/CAM procedures have been included;

— the appearance after flaming has been extended to include casting waxes.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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# Introduction

For the purposes of this document, the term ‘casting’ includes ‘pressing’, as used for glass ceramics.

It is recommended that, in assessing possible biological or toxicological hazards, reference be made to ISO 7405 and ISO 10993-1.


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# Dentistry — Casting and baseplate waxes

## 1 Scope

This document specifies the classification of and requirements for waxes used for dental casting (including products intended for CAD/CAM milling) using the lost-wax technique and dental baseplate preparation together with the test methods to be employed to determine compliance with these requirements.

Solid polymer products (such as acrylics) for CAD/CAM work, and thermoplastic or photo-curing resins used in additive processes, are not covered by this document.

This document does not include specific and quantitative requirements for freedom from biological hazards.

## 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 21920-2, *Geometrical product specifications (GPS) — Surface texture: Profile — Part 2: Terms, definitions and surface texture parameters*

ISO 6873, *Dentistry — Gypsum products*

ISO 8601-1, *Date and time — Representations for information interchange — Part 1: Basic rules*

ISO 22112, *Dentistry — Artificial teeth for dental prostheses*

## 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 terminology databases for use in standardization at the following addresses:

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

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

**3.1**
**casting wax**
mouldable material with minimal residue on ignition suitable primarily for shaping patterns in the production of cast restorations using the *lost-wax technique* (3.5)

**3.2**
**baseplate wax**
mouldable material primarily for forming occlusion rims, positioning and retaining artificial teeth therein, and shaping patterns that are duplicated in the denture base polymer

**3.3**
**milling wax**
*casting wax* (3.1) where patterns are formed by milling using CAD/CAM systems

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**3.4**
**melting point**
temperature above which no solid material exists at equilibrium

Note 1 to entry: For the practical purposes of this document, the melting point and the freezing point shall be considered as being the same.

**3.5**
**lost-wax technique**
method of casting using a wax pattern that is removed from the intact investment mould by melting or burning

## 4 Classification

Dental waxes covered by this document are classified according to the flow characteristics that represent their hardness, as follows:

a) Type 1 (casting wax, for lost-wax technique):
   1) Class 1: Soft;
   2) Class 2: Hard;
   3) Class 3: Milling.

b) Type 2 (baseplate wax):
   1) Class 1: Soft;
   2) Class 2: Hard;
   3) Class 3: Extra hard.

## 5 Requirements

### 5.1 Appearance

The wax shall be uniform in colour, supplied in pieces of uniform size, of smooth texture and free of foreign materials. Test in accordance with 8.1.

### 5.2 Flow

The wax when tested in accordance with 8.2 shall have flow values conforming with the appropriate requirements in Table 1.

**Table 1 — Flow requirements percentages**

| Temperature °C | Type 1 | | | | | Type 2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Class 1 | | Class 2 | | Class 3 | Class 1 | | Class 2 | | Class 3 | |
| | min. | max. | min. | max. | max. | min. | max. | min. | max. | min. | max. |
| 23,0 ± 0,2 | — | — | — | — | — | — | 1,0 | — | 0,6 | — | 0,2 |
| 30,0 ± 0,2 | — | 1,0 | — | — | — | — | — | — | — | — | — |
| 37,0 ± 0,1 | — | — | — | 1,0 | 1,0 | 5,0 | 90,0 | — | 10,0 | — | 1,2 |
| 40,0 ± 0,1 | 50,0 | — | — | 20,0 | 20,0 | — | — | — | — | — | — |
| 45,0 ± 0,1 | 70,0 | 90,0 | 70,0 | 90,0 | — | — | — | 50,0 | 90,0 | 5,0 | 50,0 |
| — not required | | | | | | | | | | | |


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