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Dental casting wax

Cires dentaires



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Foreword

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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.

International Standard ISO 1561 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 2, *Prosthetic materials*.

This second edition cancels and replaces the first edition (ISO 1561:1975), which has been technically revised.

Annex A of this International Standard is for information only.

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Dental casting wax

1 Scope

This international Standard specifies the classification of and requirements for dental casting wax, together with the test methods to be employed to determine compliance with these requirements.

This International Standard is applicable to dental casting wax used in making patterns in the production of fixed prostheses restorations by the "lost-wax" casting technique.

NOTE 1 Specific qualitative and quantitative requirements for freedom from biological hazard are not included in this International Standard. In assessing possible biological or toxicological hazards, reference should be made to ISO 10993-1 and ISO/TR 7405.

2 Definition

For the purposes of this International Standard, the following definition applies.

2.1 casting wax: Compound consisting essentially of natural waxes, resins and hydrocarbons of the paraffin and microcrystalline series.

3 Classification

Dental casting waxes are classified according to the flow characteristics that define their hardness as follows:

Type 1:	Soft
Type 2:	Hard

4 Requirements

4.1 Uniformity and purity

The wax shall be uniform and free from visible foreign materials.

4.2 Size and shape

The size and shape of the wax shall be as stated by the manufacturer.

4.3 Colour

The colour of the wax shall be as stated by the manufacturer.

4.4 Softening characteristics

The wax shall soften uniformly when heated, without becoming flaky. It shall not laminate when formed into a working mass.

4.5 Chipping

The wax shall not show appreciable chipping or flaking when trimmed to a fine margin at $(23 \pm 2) ^\circ\text{C}$.

4.6 Flow behaviour

When tested in accordance with 6.2, the sample of the wax shall produce flow results complying with the requirements in table 1 for different types of wax at the three applicable test temperatures.

Table 1 — Wax flow behaviour (% change in specimen length)

Test temperatures °C	Type 1		Type 2	
	Minimum %	Maximum %	Minimum %	Maximum %
30	—	1,0	—	—
37	—	—	—	1,0
40	50,0	—	—	20,0
45	70,0	90,0	70,0	90,0

4.7 Residue on ignition

The melted wax when ignited at 500 °C shall leave no residue in excess of 0,1 % of the original mass of the specimen, as tested in accordance with 6.3.

For wax having residue exceeding 0,1 % original mass at 500 °C ignition and designed for use with investments formulated for a burnout temperature higher than 700 °C, the manufacturer shall indicate on the label the amount of residue at 500 °C. When the wax is ignited at 500 °C, the residue shall be within 20 % of the manufacturer's stated value. Such wax shall not leave more than 0,1 % residue when ignited at 700 °C.

5 Sampling

The method of procurement and the amount of wax needed for testing shall be the subject of agreement between the interested parties.

6 Test methods

6.1 Visual inspection

Use visual inspection in determining compliance with the requirements as specified in 4.1 to 4.5 and in clause 7.

6.2 Evaluation of flow characteristics

6.2.1 Apparatus

6.2.1.1 Metric micrometer.

6.2.1.2 Flow-testing instrument (see figure 1), consisting of the following parts:

- a metallic cylinder (A);
- a shaft having low thermal conductivity (B);
- a brass plate (C);
- a measuring dial gauge (D) with scale graduated in 0,005 mm;
- a lock-nut screw (E).

The total mass of the components A, B, C and D shall be 2 kg. The cylinder (A) shall be separated a minimum distance of 76 mm from the brass plate (C) by the shaft (B). This shaft shall be of hard rubber, or a similarly poor thermal conductor, to reduce heat loss from the specimen. The diameter of the brass plate (C) shall be not less than 51 mm and thickness not greater than 6,35 mm.

NOTE 2 If the flow-testing instrument is robust enough to support a measuring dial gauge and a lock-nut screw rigidly, or the instrument is built with them incorporated (see D and E in figure 1), then a measuring dial gauge accurate to 0,005 mm with a range of at least 10 mm may replace the micrometer for direct measurement.

6.2.1.3 Mould (see figure 2), consisting of a stainless steel plate 6 mm thick, having parallel flat top and bottom surfaces, and containing four holes each 10 mm in diameter. The axes of the holes shall be perpendicular to the surface of the plate. The sides of the holes shall be finished smooth.

6.2.1.4 Pouring pan (see figure 3), of metal or conventional porcelain, with handle.

6.2.1.5 Cellophane or polyethylene film.

6.2.1.6 Calibrated thermometer.