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Dental baseplate/modelling wax

Cires dentaires à modeler

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Reference number
ISO 12163:1999(E)

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 12163 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 2, *Prosthetic materials*.

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Introduction

This International Standard does not specify the requirements for safety from biological or toxicological hazards. It is however recommended that reference be made to ISO 7405 and ISO 10993-1 for assessing possible biological or toxicological hazards.

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Dental baseplate/modelling wax

1 Scope

This International Standard specifies the classification of, and requirements for, dental baseplate/modelling wax consisting of natural and synthetic waxes used principally in the construction of dentures, together with the test methods to be employed to determine compliance with those requirements.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1302, *Technical drawings — Method of indicating surface texture*.

ISO 1942-2, *Dental vocabulary — Part 2: Dental materials*, <http://standards.iteh.ai/catalog/standards/sist/616df079-9232-49a8-9f6c-e715d97a7c40/iso-12163-1999>

ISO 3336:1993, *Dentistry — Synthetic resin teeth*.

ISO 4824:1993, *Dentistry — Ceramic denture teeth*.

ISO 6873:1998, *Dental gypsum products*.

3 Classification

Dental baseplate/modelling waxes are classified according to the flow characteristics that represent their hardness, as follows:

Type 1: Soft

Type 2: Hard

Type 3: Extra-hard

4 Requirements

4.1 Appearance

The sheet wax shall be uniform in colour and thickness, of smooth texture and free of foreign materials. Use visual inspection (6.1) to determine compliance with this requirement.

4.2 Colour

The colour of the wax shall be as stated by the manufacturer. Use visual inspection to determine compliance with this requirement (6.1).

4.3 Behaviour on softening

When heated, the wax shall soften without crumbling or becoming flaky, and shall cohere readily and not laminate when formed into a working mass (6.1).

4.4 Behaviour on trimming

The wax shall be trimmed easily and cleanly with a sharp instrument at $(23,0 \pm 2,0)$ °C without tearing, chipping or flaking (6.1).

4.5 Appearance after flaming

The wax shall have a smooth glossy surface after sufficient flame heating to melt the wax superficially (6.1).

4.6 Residue

The wax shall not leave a residue on ceramic or plastic teeth when tested as described in 6.2.1.

4.7 Behaviour of colouring material (standards.iteh.ai)

The colouring material shall neither separate from the wax nor impregnate the gypsum mould when tested as described in 6.2.1.

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4.8 Flow behaviour

The samples of wax, when tested in accordance with 6.2.2, shall have flow properties complying with the requirements in Table 1.

Table 1 — Flow at certain temperatures

Temperature °C	Type 1		Type 2		Type 3	
	Minimum (%)	Maximum (%)	Minimum (%)	Maximum (%)	Minimum (%)	Maximum (%)
$(23,0 \pm 0,1)$	—	1,0	—	0,6	—	0,2
$(37,0 \pm 0,1)$	5,0	90,0	—	10,0	—	1,2
$(45,0 \pm 0,1)$	—	—	50,0	90,0	5,0	50,0

4.9 Adhesion on storage

Self-adhesion during storage of the wax shall be such that when tested as described in 6.2.3, there shall be no evidence of damage to wax surfaces that have been in contact with each other or with the paper. Where separating paper is used, the wax and paper surfaces shall separate cleanly and readily.

5 Sampling

The method of procurement and the amount of wax needed for testing shall be the subject of agreement between the interested parties. The material procured shall be from a single production batch.

6 Test methods

6.1 Visual inspection

Use visual inspection in determining compliance with requirements specified in 4.1, 4.2, 4.3, 4.4 and 4.5.

6.2 Physical tests

6.2.1 Residue and colouring material

6.2.1.1 Apparatus

6.2.1.1.1 Metal former, of design illustrated in Figure 1, which incorporates a trough 5 mm wide and at least 1,5 mm deep for use in mounting the teeth.

6.2.1.1.2 Normal dental laboratory apparatus for denture flasking and processing, as shown in Figure 1.

6.2.1.2 Procedure

Place a strip of the test wax in the trough of the metal former. Mount three anterior synthetic polymer teeth conforming to ISO 3336 and three ceramic teeth conforming to ISO 4824 into the wax as shown in Figure 1 a). Invest the metal former and mounted teeth in a denture flask using dental plaster or dental stone, or both, conforming to ISO 6873 [see Figure 1b)]. Let the flask remain undisturbed for between 2 h and 3 h after pouring the plaster or stone in contact with the wax. Then immerse the flask in a water bath at $(50 \pm 2) ^\circ\text{C}$ for 10 min, remove and open immediately. Strip out the metal block and the bulk of the wax, and flush the flask with a continuous stream of boiling water for (60 ± 5) s.

6.2.1.3 Evaluation

When examined in accordance with 6.1, all exposed teeth and gypsum surfaces shall be free from wax residue.

6.2.2 Flow

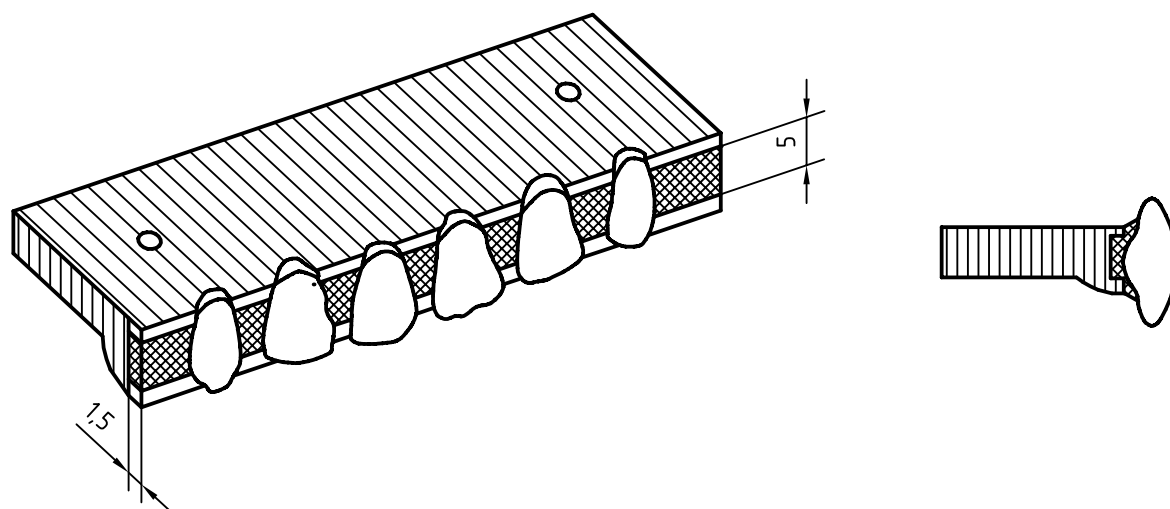
6.2.2.1 Apparatus

6.2.2.1.1 Micrometer screw gauge, accurate to 0,005 mm or better.

6.2.2.1.2 Flow-testing instrument (see Figure 2), consisting of the following components:

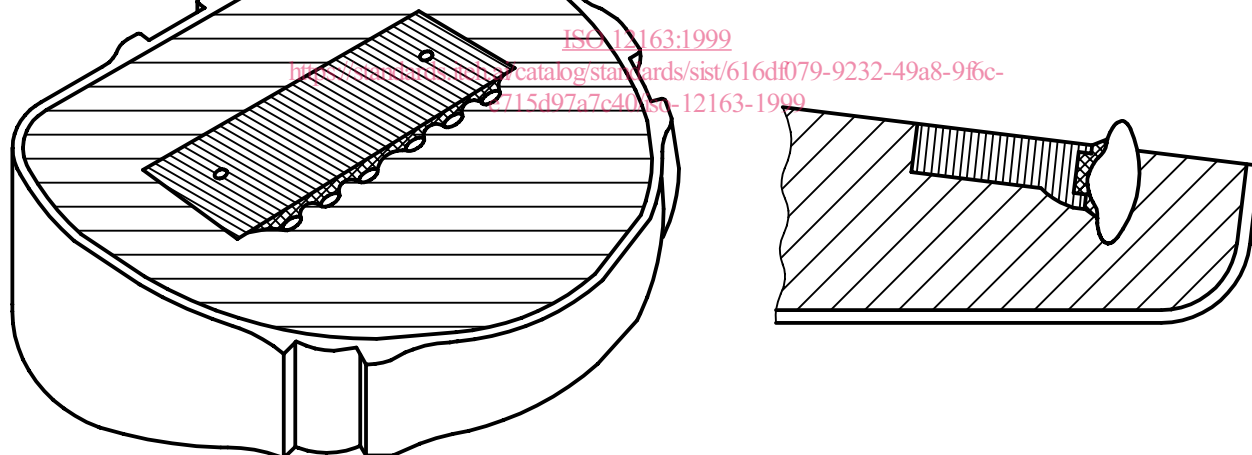
- a) **metallic cylinder (weight)** (A);
- b) **shaft** having a low thermal conductivity (B);
- c) **brass plate** (C);
- d) **measuring dial gauge** (D), accurate to 0,005 mm or better;
- e) **lock-nut screw** (E).

Dimensions in millimetres



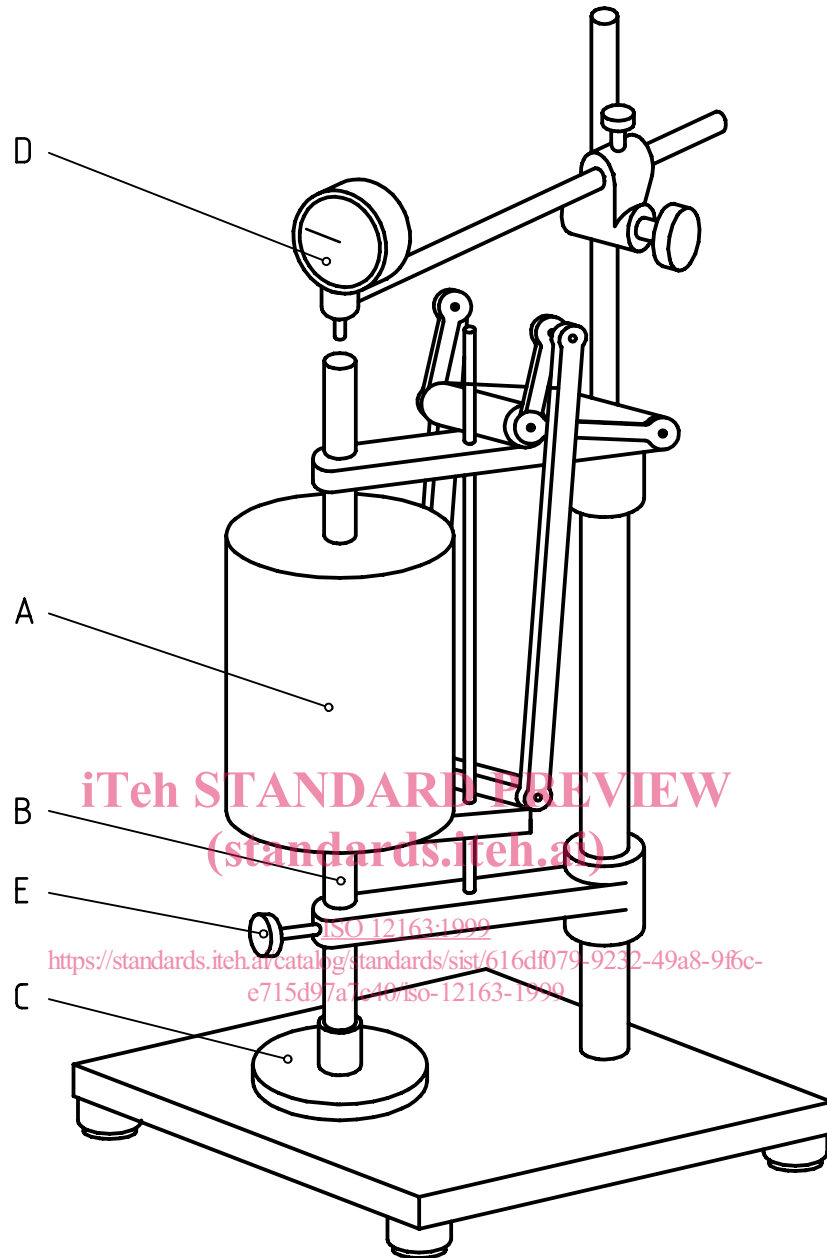
a)

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b)

Figure 1 — Apparatus for test for residue and colouring material

**Key**

- A Weight
- B Shaft
- C Brass plate
- D Gauge
- E Lock-nut screw

Figure 2 — Flow-testing instrument