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AMENDMENT 1
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Dentistry — Casting investments and refractory die materials

AMENDMENT 1: Requirement and test method for adequacy of expansion of Type 1 and Type 2 materials

Art dentaire — Revêtements et matériaux pour modèles réfractaires

AMENDEMENT 1: Exigence et méthode d'essai pour l'adéquation d'expansion des matériaux de Type 1 et de Type 2

Reference number
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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.

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Amendment 1 to ISO 15912:2006 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 2, *Prosthodontic materials*.

Dentistry — Casting investments and refractory die materials

AMENDMENT 1: Requirement and test method for adequacy of expansion of Type 1 and Type 2 materials

Page i, Cover

In the French title, replace the words “Art dentaire” with “Médecine bucco-dentaire”.

Page 1, Normative references

Add the following normative references:

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

ISO 15854, *Dentistry — Casting and baseplate waxes*

ISO 22674, *Dentistry — Metallic materials for fixed and removable restorations and appliances*

Page 3, 5.7

After 5.7, add the following subclause:

5.8 Adequacy of expansion of Type 1 and Type 2 materials

When tested in accordance with 7.6, the diameter of the cast discs shall be, with respect to the diameter of the pattern from which they were made:

a) no smaller than 99,5 % in the case of Type 1 casting investments materials (i.e. those for the manufacture of inlays, crowns and other fixed restorations);

b) no smaller than 99,0 % in the case of Type 2 casting investment materials (i.e. those for the manufacture of complete or partial dentures or other removable appliances).

NOTE This requirement ensures that one dimension of a casting made according to the manufacturer's instructions is no smaller than a specified proportion of the same dimension on the pattern used to produce the casting. This dimension is the direction of maximum constraint to expansion.

Page 4, 7.2.2

Replace the NOTE with the following:

NOTE Three more specimens (from three mixes of investment) are required if one specimen meets the requirement specified in 5.3 and the other does not.

Page 12, 7.5.6

After 7.5.6, add the following subclause:

7.6 Adequacy of expansion of Type 1 and Type 2 materials

7.6.1 General

This test uses a disc form. The diameter of the disc is measured on the pattern and on the casting made from that pattern, and the values are compared. The investing and casting procedures used are those recommended by the manufacturer of the casting investment product. The type of alloy used for the casting shall be one which the manufacturer of the casting investment product recommends as suitable for casting into moulds made in the investment.

7.6.2 Material and apparatus

7.6.2.1 Equipment for the preparation of the disc patterns for casting, such as a lathe.

7.6.2.2 Equipment to measure the diameter of the disc pattern and castings to an accuracy of 0,005 mm. When a soft pattern material such as wax is used, a non-contact measurement shall be performed.

7.6.2.3 Dental casting equipment normally used for the manufacture of dental castings.

7.6.2.4 Grit blasting equipment using grit no larger than 50 µm size, in accordance with ISO 6344-1.

7.6.2.5 Casting wax that complies with ISO 15854 or a polymeric material suitable for making disc patterns; the material used for the pattern shall not crack the mould during heating.

7.6.2.6 Casting alloy that complies with ISO 22674. The casting alloy shall be the same type as the casting investment material to be used for casting and it shall be new alloy from a single lot.

7.6.3 Number of specimens

Make three specimens from three mixes of investment. Three more specimens (from three mixes of investment) are required if two specimens do not meet the requirement specified in 5.8.

7.6.4 Pattern

Prepare discs of (12,0 ± 1,0) mm diameter and (1,5 ± 0,5) mm thickness from wax or polymer material (see Figure 2). The discs shall deviate from circularity by no more than 0,01 mm.

Measure the diameter of the pattern at 6 positions equidistant around the periphery (30° intervals), and record the diameter to an accuracy of 0,005 mm. Calculate the mean of the values to the nearest 0,001 mm.

7.6.5 Testing procedure

Attach a straight sprue to the face of each disc at its centre and at right angles to the face, leaving the rim undamaged (see Figure 2).

Invest, burnout and cast according to the manufacturer's recommendations. Invest one pattern in each mould with the position of the sprue along the axis of the casting ring.

Remove the cast metal disc from the mould and clean by grit blasting.