
**Dentistry — Torsion test of implant
body/connecting part joints of
endosseous dental implant systems**

*Médecine bucco-dentaire — Essai de torsion sur l'interface corps
d'implant/élément de connexion des systèmes d'implants dentaires
endo-osseux*



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Foreword

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In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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.

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Introduction

Most dental implant systems currently on the market employ a dental implant body that is inserted within the jaw bone, to which other components can be joined when constructing a prosthetic superstructure. The connection between these components and the implant body should be sufficiently rigid to resist masticatory loads, which have a significant torsional component. Implant systems therefore often incorporate features to restrict rotation at the connection. If this is insufficiently strong, then distortion/fracture of the linked components will occur. A standardised torsion test for the joint between the implant body and connecting part facilitates comparative evaluation.

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1 Scope

This Technical Specification establishes a method to determine the torsional yield strength and maximum torque of the implant body/connecting part joints of endosseous dental implant systems. This test is most appropriate for evaluating new types of joints and connecting parts, as well as new materials.

This Technical Specification provides a protocol for torsional loading of an implant body/connecting part joint. It is not applicable for predicting the *in vivo* performance of an endosseous dental implant system and it is not derived from observations of clinical failure.

2 Normative references

The following referenced documents are indispensable for the application 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*

3 Terms and definitions

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

3.1

torsional yield strength

M_{tors}

torque required to produce a rotation of 2° offset from the straight-line portion on the torque versus rotation angle curve

NOTE See Figure 3.

3.2

maximum torque

M_{max}

largest value of torque recorded on the torque versus rotation angle curve

NOTE See Figure 3.

4 Principle

The torsional yield strength and maximum torque of the implant body/connecting part interface are determined by clamping the implant body and connecting part to be tested in a testing device.

Testing shall be performed on finished devices or specimens that have an equivalent connecting part joint to the finished device (i.e. components that have undergone the same manufacturing process and sterilisation as