
Implants for surgery — Wear of total hip-joint prostheses —

Part 1:

**Loading and displacement parameters
for wear-testing machines and
corresponding environmental conditions
for test**

Implants chirurgicaux — Usure des prothèses totales de l'articulation de la hanche —

Partie 1: Paramètres de charge et de déplacement pour machines d'essai d'usure et conditions environnementales correspondantes d'essai



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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.

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.

ISO 14242-1 was prepared by Technical Committee ISO/TC 150, *Implants for surgery*, Subcommittee SC 4, *Bone and joint replacements*.

This second edition cancels and replaces the first edition (ISO 14242-1:2002), which has been technically revised.

ISO 14242 consists of the following parts, under the general title *Implants for surgery — Wear of total hip-joint prostheses*:

- *Part 1: Loading and displacement parameters for wear-testing machines and corresponding environmental conditions for test*
- *Part 2: Methods of measurement*
- *Part 3: Loading and displacement parameters for orbital bearing type wear testing machines and corresponding environmental conditions for test*

Implants for surgery — Wear of total hip-joint prostheses —

Part 1:

Loading and displacement parameters for wear-testing machines and corresponding environmental conditions for test

1 Scope

This part of ISO 14242 specifies the relative angular movement between articulating components, the pattern of the applied force, the speed and duration of testing, the sample configuration and the test environment to be used for the wear testing of total hip-joint prostheses.

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 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 7206-1, *Implants for surgery — Partial and total hip-joint prostheses — Part 1: Classification and designation of dimensions*

ISO 14242-2, *Implants for surgery — Wear of total hip-joint prostheses — Part 2: Methods of measurement*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7206-1 and the following apply.

3.1

abduction/adduction

angular movement shown in Figure 1 a)

3.2

flexion/extension

angular movement shown in Figure 1 b)

3.3

inward/outward rotation

angular movement shown in Figure 1 c)

3.4

polar axis

axis of the acetabular component which intersects the centre of the spherical articulating surface and is perpendicular to the plane of the flange or, if no flange is present, perpendicular to the plane of the entry diameter

4 Principle

The femoral and acetabular components of a test specimen are placed in position in their normal configuration. The test apparatus transmits a specified time-varying force between the components, together with specified relative angular displacements. A control specimen, if polymers are the object of investigation, is subjected to