
**Implants for surgery —
Hydroxyapatite —
Part 3:
Chemical analysis and
characterization of crystallinity ratio
and phase purity**

Implants chirurgicaux — Hydroxyapatite —

*Partie 3: Analyse chimique et caractérisation du rapport de
cristallinité et de la pureté de phase*

ISO 13779-3:2018

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Foreword

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This second edition cancels and replaces the first edition (ISO 13779-3:2008), which has been technically revised.

A list of all parts in the ISO 13779 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

No known surgical implant material has ever been shown to cause absolutely no adverse reactions in the human body. However, long term clinical experience of the use of hydroxyapatite has shown that an applicable level of biological response can be expected, if the material is used in appropriate applications.

Biocompatibility and resorption rate of hydroxyapatite material for surgical application may depend of the presence of trace elements, foreign crystalline phases and crystallinity ratio. Amorphous calcium phosphate, tetracalcium phosphate, α -tricalcium phosphate and β -tricalcium phosphate have demonstrated to have a higher solubility and may resorb more rapidly than hydroxyapatite in the body. CaO and heavy metals may impair the biocompatibility of the material. As a consequence, it is important to assess the composition of the material.

In this field, the assessment of the different crystalline and amorphous phase components has been under continuing development (of both equipment and processing software). In this document a new method for measuring the crystallinity ratio of hydroxyapatite is introduced and the Rietveld method is introduced as an alternative method for measuring the foreign phase content.

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