

# DIN EN ISO 13356:2016-02 (E)

## Implants for surgery - Ceramic materials based on yttria-stabilized tetragonal zirconia (Y-TZP) (ISO 13356:2015)

---

<b>Contents</b>		<b>Page</b>
Europeanforeword .....		3
Introduction .....		5
1	Scope .....	6
2	Normative references .....	6
3	Physical and chemical properties .....	7
3.1	Test category .....	7
3.1.1	General .....	7
3.1.2	Category 1 .....	7
3.1.3	Category 2 .....	7
4	Test methods .....	9
4.1	General .....	9
4.2	Bulk density .....	9
4.3	Chemical composition .....	9
4.4	Microstructure .....	9
4.4.1	Principle .....	9
4.4.2	Test report .....	10
4.4.3	Amount of monoclinic phase .....	10
4.5	Biaxial flexural strength .....	11
4.5.1	Principle .....	11
4.5.2	Apparatus .....	11
4.5.3	Preparation of test specimens .....	11
4.5.4	Procedure .....	12
4.5.5	Calculation of results .....	13
4.5.6	Test report .....	13
4.6	Four-point bending strength .....	13
4.7	Weibull modulus .....	14
4.8	Young's modulus .....	14
4.9	Hardness .....	14
4.10	Cyclic fatigue .....	14
4.10.1	Principle .....	14
4.10.2	Apparatus .....	14
4.10.3	Sample size and preparation of test specimens .....	14
4.10.4	Procedure and sample requirement .....	14
4.10.5	Test Report .....	15
4.11	Radioactivity .....	15
4.11.1	Principle .....	15
4.11.2	Apparatus .....	15
4.11.3	Sample preparation .....	16
4.11.4	Isotope identification - Energy calibration .....	16
4.11.5	Quantitative analysis .....	16
4.11.6	Expression of results .....	17
4.11.7	Test report .....	17
4.12	Accelerated aging test .....	17
4.12.1	General .....	17
4.12.2	Procedure .....	17
4.12.3	Evaluation of accelerated aging outcome .....	17

<b>Bibliography .....</b>	<b>18</b>
<b>Foreword .....</b>	<b>4</b>