

# ISO 9693:2019-10 (E)

## Dentistry - Compatibility testing for metal-ceramic and ceramic-ceramic systems

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>1</b>
<b>4</b>	<b>Requirements .....</b>	<b>2</b>
4.1	Biocompatibility .....	2
4.2	Physical properties .....	2
4.2.1	General .....	2
4.2.2	Thermal expansion .....	2
4.2.3	De-bonding/crack-initiation test .....	2
4.2.4	Thermal shock resistance .....	3
<b>5</b>	<b>Sampling .....</b>	<b>3</b>
5.1	Metallic substructure material .....	3
5.2	Ceramic substructure material .....	3
5.3	Veneering ceramic .....	3
<b>6</b>	<b>Test methods .....</b>	<b>3</b>
6.1	Linear thermal expansion .....	3
6.1.1	Metallic materials .....	3
6.1.2	Ceramic materials .....	3
6.2	Glass transition temperature .....	3
6.3	Young's modulus .....	3
6.4	De-bonding/crack-initiation test .....	3
6.4.1	Apparatus .....	3
6.4.2	Preparation of test specimens .....	4
6.4.3	Determination of fracture force .....	4
6.4.4	Test report .....	6
6.5	Thermal shock testing .....	6
6.5.1	General .....	6
6.5.2	Preparation of test specimen .....	7
6.5.3	Thermocycling test with fixed temperature interval .....	7
6.5.4	Thermocycling test with increasing temperature interval .....	7
<b>7</b>	<b>Test report .....</b>	<b>8</b>
Bibliography .....		10