

<b>Contents</b>		<b>Page</b>
<b>European foreword</b> .....		<b>4</b>
<b>Foreword</b> .....		<b>5</b>
<b>Introduction</b> .....		<b>6</b>
<b>1</b>	<b>Scope</b> .....	<b>7</b>
<b>2</b>	<b>Normative references</b> .....	<b>7</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>7</b>
<b>4</b>	<b>Symbols and classification</b> .....	<b>9</b>
4.1	Symbols.....	9
4.2	Classification.....	11
<b>5</b>	<b>Requirements</b> .....	<b>12</b>
5.1	Chemical composition.....	12
5.1.1	Reported composition.....	12
5.1.2	Permitted deviation from the reported composition for elements.....	12
5.2	Hazardous elements.....	13
5.2.1	Hazardous elements.....	13
5.2.2	Limits for the hazardous elements.....	13
5.2.3	Nickel.....	13
5.3	Biocompatibility.....	13
5.4	Mechanical properties.....	13
5.4.1	General.....	13
5.4.2	Proof stress of 0,2 % non-proportional extension.....	14
5.4.3	Elongation after fracture.....	15
5.5	Elastic modulus.....	16
5.5.1	Precision of measurement method.....	16
5.5.2	Determination of compliance with the requirements for Type 5 materials.....	16
5.5.3	Mean value.....	16
5.6	Density.....	16
5.7	Corrosion resistance for material integrity.....	16
5.8	Tarnish resistance.....	16
5.9	Solidus and liquidus temperatures (alloy) or melting point (commercially pure metal).....	17
5.10	Thermal expansion coefficient.....	17
5.11	Information, instructions and marking.....	17
<b>6</b>	<b>Sampling</b> .....	<b>17</b>
<b>7</b>	<b>Preparation of specimen</b> .....	<b>17</b>
7.1	General.....	17
7.2	Heat treatment.....	18
7.2.1	General conditions.....	18
7.2.2	Metallic materials for which a heat treatment is recommended in the instructions for use.....	18
7.2.3	Metallic material for metal-ceramic restorations.....	18
7.2.4	Metallic materials for which no heat-treatment is recommended in the instructions for use.....	18
7.3	Proof stress of 0,2 % non-proportional extension and the elongation after fracture: Metallic materials for which production of conventional specimens is possible.....	18
7.4	Type 0 metallic materials for which the production of conventional specimens is not possible.....	19
7.5	Elastic moduli.....	19
7.5.1	General.....	19

7.5.2	Tensile strain method	20
7.5.3	Flexure method (three or four point bending)	20
7.5.4	Acoustic resonance method	21
7.6	Density measurement	21
7.6.1	Solid material	21
7.6.2	Powder material	22
7.7	Corrosion resistance	22
7.8	Tarnish resistance and colour	22
7.9	Linear thermal expansion	22
<b>8</b>	<b>Measurement and test methods</b>	<b>22</b>
8.1	Information, instructions and marking	22
8.2	Chemical composition	22
8.3	Mechanical testing	23
8.3.1	Apparatus	23
8.3.2	Test procedure	23
8.3.3	Proof stress of 0,2 % non-proportional extension	23
8.3.4	Percentage elongation after fracture	24
8.4	Elastic modulus measurement	24
8.4.1	Tensile strain method	24
8.4.2	Flexure method in three- or four-point bending mode	25
8.4.3	Acoustic resonance method	27
8.5	Calculation of elasticity parameters from acoustic measurement	29
8.5.1	General	29
8.5.2	Elastic modulus	29
8.5.3	Shear modulus	29
8.5.4	Poisson's ratio	30
8.6	Density	30
8.6.1	Preparation of specimen	30
8.6.2	Reagents	30
8.6.3	Apparatus	30
8.6.4	Procedure	30
8.7	Corrosion resistance by the static 7 d immersion procedure of ISO 10271	30
8.7.1	Preparation of specimen	30
8.7.2	Reagents	30
8.7.3	Apparatus	30
8.7.4	Test solution	31
8.7.5	Test procedure	31
8.7.6	Analysis	31
8.7.7	Treatment of data	31
8.8	Sulfide tarnish test — Cyclic immersion	31
8.9	Sulfide tarnish test — Static immersion	31
8.10	Solidus and liquidus temperatures (dental casting alloys) or melting point (commercially pure metals)	31
8.10.1	Cooling curve method	31
8.10.2	Thermal analysis method	32
8.11	Linear thermal expansion	33
<b>9</b>	<b>Test report</b>	<b>33</b>
<b>10</b>	<b>Information and instructions for use</b>	<b>34</b>
10.1	Information	34
10.2	Processing instructions	35
10.3	Marking and labelling	35
10.4	Labelling of the package	35
<b>Annex A (informative) Tensile testing of a non-cast Type 0 metallic material that is intended for use in a thickness between 0,1 mm and 0,5 mm</b>		<b>37</b>
<b>Annex B (normative) Calculation of uncertainty for elasticity measurement</b>		<b>40</b>
<b>Annex C (informative) Measurement of Poisson's ratio</b>		<b>44</b>
<b>Bibliography</b>		<b>46</b>