

ISO 28319:2018 (E)

Dentistry — Laser welding and filler materials

Contents

	Foreword
1	Scope
2	Normative references
3	Terms and definitions
4	Requirements
4.1	Chemical composition
4.1.1	Metallic materials to be joined
4.1.2	Filler material
4.1.2.1	Chemical composition
4.1.2.2	Permitted deviation from the reported composition
4.1.3	Hazardous elements in filler material
4.1.3.1	Recognized hazardous elements
4.1.3.2	Permitted limits for hazardous elements
4.2	Biocompatibility
4.3	Mechanical strength of laser welded joint (tensile strength)
4.4	Corrosion resistance
4.4.1	Static immersion test
4.4.2	Appearance after corrosion exposure
4.5	Laser welding process
5	Sampling
6	Preparation of specimens
6.1	General
6.2	Specimens for tensile testing
6.2.1	General
6.2.2	Procedure
6.3	Specimens for corrosion testing
6.3.1	General
6.3.2	Seam geometry
7	Measurement and test methods
7.1	Visual inspection
7.2	Chemical composition
7.3	Tensile testing
7.3.1	General
7.3.2	Evaluation of tensile testing results
7.3.3	Calculation of tensile strength
7.4	Corrosion resistance by static immersion test
7.4.1	Reagents
7.4.2	Apparatus
7.4.3	Test solution
7.4.4	Test procedure
7.4.5	Analysis
7.4.6	Microscopic inspection
7.4.7	Report
8	Instruction for use
9	Marking and labelling

9.1	Marking
9.2	Labelling
10	Test report

Annex A (informative) Laser welding process

A.1	Work station and equipment
A.2	Protective device and safety measures
A.2.1	General
A.2.2	Personal protection against laser radiation
A.2.3	Personal protection against dust and fumes
A.3	Maintenance and operational state
A.3.1	Maintenance of welding equipment
A.3.2	Operational state
A.4	Selection of materials
A.5	Joining technique
A.6	Inspection of welding results
A.7	Operational state of laser welding unit
A.7.1	General
A.7.2	Visual inspection
A.7.3	Setting of working microscope
A.7.4	Check of laser beam
A.7.5	Setting of shielding gas zone
A.7.6	Setting and control of welding parameters
A.7.7	Optimization of welding parameters
A.8	Microscopic inspection of welding result
A.9	Fit

Page count: 13