

SHERADENT

INSTRUCTIONS FOR USE

Precious metal bonding alloy based on cobalt for PFM restorations, type 5, cylindrical

1. Indications

Biocompatible casting alloy with high flowability and reduced oxide formation for the fabrication of individual restorations based on the clinician's specifications such as crowns and bridges. Can be veneered with all suitable ceramic materials that are compatible with the CTE of the alloy. SHERADENT is a class IIa medical device and satisfies the requirements of DIN EN ISO 9693 & DIN EN ISO 22674. It is characterised as "free from nickel, beryllium, indium and gallium". For use by qualified personnel. Wall thicknesses, bond strengths and construction are subject to their experience.

2. Instructions for the clinician

Prepare as a chamfer or rounded shoulder with 1 mm contact surface. Remove the substance occlusal and incisal 1.5–2 mm, edge radius 0.7 mm, preparation angle 6–8°. Ensure the final wall thickness is at least 0.3 mm. Before placing the dental restoration in the mouth, it must be cleaned and disinfected according to good clinical technical practice. Cementation is performed with conventional cements or glass ionomer cement with a minimum length of the preparation of 3 mm.

3. Contraindication / adverse effects

In rare, isolated cases, allergies to components of the alloy or electrochemically induced paraesthesia are possible. In case of known allergies or incompatibilities to alloy components, the alloy should not be used. In rare cases, cobalt-based alloys may cause skin irritation in susceptible persons. A patch test is recommended. Prepared tooth stumps with a length < 3 mm are not suitable for treatment.

4. Safety instructions

Metal dust and vapour are harmful to health. When grinding and blasting, use an appropriate extraction system. We also recommend using type FFP3-EN149 respiratory protection.

Carefully note the presence of other metals in the oral cavity before inserting the dental restoration. Different metals can lead to electrochemically induced paraesthesia.

It is recommended that patients are made aware of the possibility that dental alloys can affect MRI results.

5. Processing instructions

Wax-up / spruing

Ensure during the wax-up that the cross-section is appropriate and the wall thickness of the finished work is 0.3 mm for simple structures and 0.5 mm for extensive cases or patients with bruxism. For bridge constructions the connectors must be adequately dimensioned and, if necessary, reinforced minimally by scalloping.

The frame must be fabricated to support ceramic.

Avoid sharp angles. Attach the sprue according to standard dental technical rules with a sufficiently sized sprue system.

Investing / preheating

Only use phosphate-bonded investment materials. Follow the instructions of the investment manufacturer.

We recommend a preheating temperature of 850°C to 950°C for 30–45 minutes.

Crucible

Only use clean ceramic (magnesium, silicon, aluminium oxide) crucibles with a separate crucible for each alloy. To prevent contamination, do not use flux or melt in a graphite crucible.

Only use new metal

With repeated melting, the essential formation of bonding oxides and a good metal-ceramic bond cannot be assured.

Induction casting / high-frequency method

Pre-melt the metal until it collapses. Then insert the muffle into the casting unit and continue to melt. The optimal point starting the casting process is before the oxide skin tears open.

Flame casting

Guidelines for regulating the flame: - Acetylene 0.4 bar / Oxygen 2 bar - Propane 0.2 bar / Oxygen 2 bar - Methane pressure / Oxygen 2 bar Melt in the low-oxygen flame zone. The optimal casting time is when the molten metal develops a honey-like consistency and can be moved by the flame.

Deflasking

The best alloy structures are achieved if the muffle is allowed to cool down slowly to room temperature.

Remove larger residues of investment material using deflasking pliers. Do not strike the cone. Then blast with aluminium oxide of 110 to 150 µm with a pressure of 3–4 bar.

Trimming

Process with tungsten carbide burs. To avoid contamination, the same set of grinding tools should always be used for each metal.

6. Ceramic firing

Oxidation firing is recommended and should be carried out at 950°C–980°C for 5 minutes. Before veneering, blast with 100–150 µm single-use aluminium oxide abrasive at a pressure of maximum 2.5–4 bar and check with a steam-jet unit that the surface is uniformly grey. Never pickle precious metal alloys. Ceramic firing and cooling must be carried out according to the manufacturer's instructions.

7. Technical specifications

Vickers hardness HV10 (N/mm ²)	286
Density (g/cm ³)	8.8
0.2% yield strength (N/mm ²)	570
Elongation after fracture (%)	10
Young's modulus (N/mm ²)	194,000
Coefficient of thermal expansion (25/600°C)	14.6 × 10 ⁻⁶ K ⁻¹

8. Temperatures (°C)

Preheating temperature of muffle	850–950
Solidus	1309
Liquidus	1417
Casting temperature	1470

9. Material composition (%)

Cobalt	64
Chromium	21
Tungsten	6
Molybdenum	6
Other elements less than 1%	Si, Mn, Fe

10. Soldering / laser welding

Avoid soldering / laser welding. When necessary, use a flux, solder or laser welding wire that is suitable for the composition and melting range. Never use gold or palladium solders.

11. Storage

Store in a dry place in the original packaging and keep away from direct sunlight. Visually inspect the label applied to the cylinders to check the product identification before use.

12. Batch tracing:

Every batch is supplied by us with a batch number (LOT). Record this number in the documentation for each patient to ensure batch tracing. For precise batch tracing only use new metal.

13. Disposal

Dispose of contents / container in accordance with local regulations.

14. Warranty

SHERA Werkstoff-Technologie GmbH & Co. KG is certified according to DIN EN ISO 13485 and guarantees flawless quality of the products based on its thorough quality assurance system. Our usage recommendations are based on guidelines determined in our test laboratory. These values can only be guaranteed if the procedural steps as described are adhered to. The user is responsible for processing the products. No liability is assumed for faulty outcomes because SHERA has no influence on the further processing. Nevertheless, any claims for damages arising from such processing refer solely to the merchandise value of our products. Serious incidents must be reported to SHERA Werkstoff-Technologie GmbH & Co. KG and the competent authorities.

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INSTRUCTIONS FOR USE



Explanations of the symbols used:



Consult instructions for use



Do not reuse



Batch number



Article number



Medical device



Date of manufacture



Manufacturer

