Anthogyr
A Straumann Group Brand

APRIL 2022 **LABORATORY INFORMATION**

COBALT-CHROME ALLOY TECHNICAL CHARACTERISTICS FOR SIMEDA® CUSTOMIZED PROSTHETICS AND RECOMMENDATIONS FOR CERAMISATION

A/ Technical information provided by the alloy manufacturer:

Chemical composition

Co	Cr	W	Si	Fe	Mn	C	Ni
57.8 - 62.4	27.0 – 30.0	8.40 – 9.50	1.65	0.11 – 0.50	0.20 - 0.35	0.10	0.10

Mechanical properties

Tensile Strength	[MPa]	>900
Modulus of Elasticity E at 20°C	[GPa]	245
Hardness HV10	[HV10]	approx. 275

Physical properties

Density	[g/cm^3]	8.4
CTE – Coefficient of Thermal Expansion 20 – 500°C	[10^{-6}*K^{-1}]	14.2
Liquidus temperature	[°C]	approx. 1320
Veneering temperature	[C°]	max. 1040

B/ Veneering recommendation

1. **Design**
   - → Minimum thickness of metal 0.4 mm.
   - → Maximum thickness of ceramic 1.5 mm.
   - → Avoid all shapes with acute angles in favor of rounded shapes.
   - → Do not place metal/ceramic transition surfaces on proximal and occlusal contact zones.
   - → Preferably use a homothetic frame design for a uniform covering of the ceramic.
   - → Check that the minimum cross-section of the connectors for the bridges is not less than 6 mm². If this is not possible due to aesthetic constraints, make a slim palatine/lingual metallic bar or "bite stop".

2. **Finishing**
   - → Do not use diamond burs or a ceramic bond stone.
   - → Only use tungsten carbide burs in order to ensure that no other alloy can penetrate sensitive areas.
   - → When retouching, the bur must always be used in the same direction, with a uniform movement.
   - → The bur must be regularly cleaned with a steam jet or ultrasonic bath.

3. **Sandblasting**
   - → Sandblast with 150 µm aluminum oxide at 2 bars of pressure.
   - → After sandblasting, the surface of the frame must no longer be contaminated.
   - → The frame is cleaned with a steam jet or boiled in distilled water.
   - → Do not touch the frame with fingers after cleaning.

4. **Oxide firing**
   - → 980°C during 10 minutes.
   - → The frame will be held in place in a uniform manner to avoid any deformation during the baking phases.
   - → A regular increase in temperature ensures frame is stable.
   - → Slow cooling prevents stresses in the frame.
   - → The color of the oxides must be uniform and there must be no marks.
   - → After oxide firing, sandblast and clean the frame again as in the paragraph 3.

5. **Bonder**
   - → Using a bonder is strongly recommended.
   - → Follow the bonder manufacturer’s instructions.

6. **Opaque**
   - → Using a bonder replaces the first layer of opaque.
   - → Do not make the layers too thick and do not allow the opaque to condense on the frame.
   - → Apply a uniform layer of opaque in order to completely cover the ceramic areas of the frame.
   - → Follow the ceramic manufacturer’s instructions.

7. **Veneering**
   - → Follow the ceramic manufacturer’s instructions and baking programs.
   - → Use a slow cooling process.