



**MARCH 2017**

**LABORATORY INFORMATION**

## SIMEDA® CoCr TECHNICAL DATE SHEET AND VENEERING RECOMMANDATION

**A/ Technical information provided by the alloy manufacturer:**

### Chemical composition

Co	Cr	W	Si	Fe	Mn	C	Ni
60.00	29.00	9.00	1.45	0.15	0.25	0.01	< 0.10

\*Average in mass -%

### Mechanical properties

Tensile Strength	[MPa]	900 – 1050
Yield Strength	[MPa]	550 – 600
Elongation	[%]	min. 25
Hardness HV10		approx. 275

### Physical properties

Modulus of Elasticity E at 20°C [GPa]	245
Specific Density [Kg/dm <sup>3</sup> ]	8.3
CTE – Middle lin. Coefficient of Thermal Expansion [10 <sup>-6</sup> *K <sup>-1</sup> ] 20 – 500°C	14.2
Liquidus temperature [°C]	approx. 1420
Veneering temperature [°C]	max. 1040

## **B/ Veneering recommandation**

### **1. Design**

- Minimum thickness of metal 0.4 mm.
- Maximum thickness of ceramic 1.5 mm.
- Avoid all shapes with acute angles in favour 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 mm<sup>2</sup>. 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 nor 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 aluminium 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 colour 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 programmes.
- Use a slow cooling process.