

# Wirocer plus

**Nickel-chrome metal-to-ceramics alloy  
– containing no beryllium**

**This is what counts:**

- ◆ Inexpensive non-precious alloy for metal-to-ceramics or plastics applications
- ◆ Easy finishing thanks to moderate hardness of 190 HV10
- ◆ Outstanding flow properties
- ◆ No long-term cooling necessary: low coefficient of expansion  $13.8 [10^{-6}K^{-1}] (25-500^{\circ}C)$
- ◆ Extremely corrosion-resistant
- ◆ Low thermal conductivity
- ◆ High modulus of elasticity
- ◆ High strength in every physiologically acceptable size
- ◆ Secure metal-to-ceramics bond
- ◆ High heat resistance: dimensionally stable during firing and soldering
- ◆ Reliable processing according to proven Wiron® system





Wirocer plus certificate

Over 35 years of research, development and practical experience make BEGO a competent partner for metal-ceramics work.

Wirocer has a low hardness of only 190 HV10 and particularly the low coefficient of expansion of Wirocer plus makes long-term cooling for the ceramics superfluous.

### Wirocer plus – outstanding corrosion resistance

Wirocer plus is just as biologically compatible as BEGO's other nickel-chrome alloys and furnishes, of course, verification of additional biological material tests in the form of a certificate. Niobium, which further stabilizes the passivation layer of chromium and molybdenum

that is important for the corrosion resistance, is added to the alloy as a special feature.

### Wirocer plus – special properties

The modulus of elasticity, which is decisive for the load capacity of a crown and bridge alloy, is double that of precious metal. With the same wax-up this means double security against deformation due to masticatory forces. The possible size of the bridge units is determined only on the basis of dental indications.

The bond strength between Wirocer plus and ceramic materials is outstanding. Wirocer plus can be veneered with ceramic materials that match the coefficient of thermal expansion of the alloy. Firing temperatures of up to 980 °C are possible.

The high heat resistance provides considerable security against deformation – both during veneering of the ceramics and during soldering or laser welding. The dentist can rely on a flawless fit of the fit-in frame also after veneering.

The low thermal conductivity of Wirocer plus protects the pulp of the abutment teeth against severe temperature irritations, such as those that may occur in connection with precious metal.

### Wirocer plus – easy processing

The ingots have a weight of 6 g and are labelled with the batch number. They can be melted and cast without any problem by means of flame and all inductively heated casting units, such as Fornax® or Nautilus®.



Bridge made of Wirocer plus

Every pack includes processing instructions.

Wirocer plus can be cooled down normally after ceramic firing; long-term cooling is not necessary thanks to the low coefficient of expansion.

The moderate hardness of 190 HV10 also proves to be very convenient. It means easier finishing, suitability for all milling work and easy polishing. Only Wiron® 99 has an even lower hardness.

### Wirocer plus – reliable soldering or laser welding

With the proven Wiron® solder and Fluxsol flux (Ref. 52531) very strong soldered joints can be achieved. They are no longer visible after polishing and can be veneered ceramically without any problem. WGL solder in connection with Minoxid (Ref. 52530) is the choice material for furnace soldering after firing.

Wiroweld NC wire, diameter 0.35 mm, is recommended as filler metal for laser welding.

Wirocer plus	
<b>Alloy characteristics:</b>	Standard values
Colour	silver
Density [g/cm <sup>3</sup> ]	8.2
Melting interval [°C]	1320 – 1365
Casting temperature [°C]	approx. 1450
Coefficient of thermal expansion [10 <sup>-6</sup> K <sup>-1</sup> ]	(25-500 °C) 13.8 (25-600 °C) 14.0
Ductile yield (A <sub>5</sub> ) [%]	16
Elongation limit (R <sub>p</sub> 0.2) [MPa]	340
Tensile strength (R <sub>m</sub> ) [MPa]	620
Preheating temperature [°C]	900 – 950
Modulus of elasticity [GPa]	approx. 200
Vickers hardness (HV10)	190
<b>CE 0044</b>	<b>ISO 9693</b>

Subject to modifications in design, scope of delivery and composition. Whether given verbally, in writing or through practical instructions, our process-related data and recommendations are based upon our own experience and trials and can only be regarded as standard values. Status as at: 22.12.04.

Composition in % by weight:			
<b>Wirocer plus</b>			
Ni 65.2; Cr 22.5; Mo 9.5; Nb < 2; Si < 2; Fe < 2; Mn < 2			
<b>Availability and accessories:</b>			
<b>Wirocer plus</b>	Unit	Content	<b>Order No.</b>
Wiroweld NC, Ni-Cr laser wire, free of carbon, Ø 0.35 mm	1 pack	1000 g	<b>50080</b>
Wiron® soldering rods	1 pack	5 g	<b>50006</b>
WGL soldering rods	1 pack	5 g	<b>52625</b>
WGL soldering rods	1 pack	5 g	<b>61079</b>