



Manufacturer: German Special Alloys GmbH | Carl-Friedrich-Benz-Str. 1b | 47877 Willich | Germany



Produced for:
AZ DENTAL GMBH | Siemensstrasse 5 | 78467 Konstanz | Deutschland | info@azdental.de

METAPLUS UNI is a dental metal-ceramic alloy based on cobalt. **METAPLUS UNI** is free from nickel, cadmium, beryllium and lead and fulfils the standards of EN ISO 22674 type 4 for appliances with thin sections that are subject to very high forces, e.g. removable partial dentures, clasps, thin veneered crowns, wide-span bridges or bridges with small cross sections, bars, attachments and implant retained superstructures.

Composition w _i			Properties		
Co	%	62,5	Density ρ	g · cm ⁻³	8,3
Cr	%	24,6	Vickers hardness	HV 10	285
W	%	8,5	Linear thermal expansion coefficient α	10 ⁻⁶ · K ⁻¹	13,9
Mo	%	2,9	25 - 500 °C		
Si	%	1,3	Linear thermal expansion coefficient α	10 ⁻⁶ · K ⁻¹	14,0
Nb, Mn, Fe, N	%	< 1	20 - 600 °C		
			Melting range T _S - T _L	°C	1304-1369
			Casting temperature T _{Cast}	°C	1470
			Highest recommended firing temperature T _{F,max}	°C	980
			0,2-% Yield strength R _{p0,2}	MPa	490
			Modulus of elasticity E	GPa	210
			Tensile elongation at break A ₅	%	10

Recommendations for Use

Waxing-up

Prepare wax-up as usual but avoid material thickness lower than 0,35 mm. Lead sprues indirectly. Use round wax wires for sprues with Ø 2-2,5 mm for single crowns and Ø 2,5-3 mm for bridges. For frames with more than 4 teeth prepare a distribution funnel with Ø 3,5-4 mm, for massive pontics prepare a distribution funnel with up to Ø 5 mm.

Investing and Casting

Suitable investment materials are phosphate-bounded investments for crowns and bridges. Preheat the investment to 850-900 °C and hold final temperature for 30 minutes. Follow the manufacturer's instructions for use for the casting machine. Always use an individual ceramic crucible for **METAPLUS UNI** to prevent contamination with other alloys. Clean crucible after each use to avoid residues of slag. Do not overheat the alloy. Start casting as soon as the ingots have collapsed giving a uniform melt. For melting by flame heat the ingots and give a rotary motion by use of the flame. Start casting as soon as the bath begins to vibrate. Allow the cylinder to cool down slowly to the ambient temperature and deflask without hitting the cone.

Firing of Ceramics

Use commercially available dental ceramics for cobalt based metal alloys with a suitable linear thermal expansion coefficient. Please follow the associated work instructions and cooling schemes given by the ceramic manufacturer. After deflasking:

1. Separation of sprues and finishing of the object. Carbide cutters are recommended.
2. Sand blast the surface by use of a pencil-blaster with aluminium oxide 100 µm or 250 µm.
3. Ultrasonically clean the frame in distilled water or degrease with ethyl acetate.
4. The oxide firing is optional, to be done at about 960 °C under vacuum for 5 minutes. Always remove the oxide layer after oxide firing by sand blasting with aluminium oxide and degrease again.
Note: A clean surface is best to avoid bubbles in ceramics.
5. The opaque is applied on the surface by a first thin wash firing and a second evenly covering opaque layer.
Before firing always let the opaque dry for 5-10 minutes at 600 °C.
6. Firing and cooling should be carried out in accordance to the ceramic manufacturer's instructions.
7. After every firing step (dentine bake, build-up and glazing) cooling phase until ca. 750 °C.

Finishing

After firing of the ceramic, polish the frame with suitable grinding and polishing instruments for dental alloys up to high gloss.

Soldering and Welding

Soldering before firing of the frame can be carried out with commercially available solders und high temperature flux. The width of the solder gap should be 0,05-0,2 mm. For welding with laser use suitable commercially available metal welding wires.

Safety Note

Metal dusts are harmful to health. Use a dust extractor. Consider allergic hypersensitivities to contents of the alloy. In case of suspected incompatibility with individual elements of this alloy, this should not be used.

Warranty

These application recommendations are based on own experiments and experiences and can therefore only be regarded as guidelines. The dentist or dental technician is responsible for the correct processing of this alloy.



Batch number



Refer to instructions for use



Manufacturer



Not for reuse