



EN – Instructions for use

1. Product description

optimill acero nf is a cobalt-based dental metal-ceramic alloy. optimill acero nf is free of nickel, cadmium, beryllium, and lead and complies with EN ISO 22674 Type 4 for applications with thin cross-sections that are exposed to very high forces, e.g., removable partial dentures, clasps, thin veneered single crowns, fixed full arch prostheses or bridges with small cross-sections, bars, attachments, and implant-supported superstructures.

Chemical composition

Co %	63
Cr %	29
Mo %	5,8
Si %	1,2
Nb %	< 1
Mn %	< 1
Fe %	< 1

Technical data (guideline values, milled/fired condition)

Hardness (HV 10)	330
Elongation at break (%)	6,5
Tensile strength (MPa)	610
0,2% yield strength (MPa)	610
Modulus of elasticity (GPa)	200
Density (g/cm ³)	8,2
Oxidation temperature (°C)	980
Coefficient of thermal expansion (10 ⁻⁶ K ⁻¹) 25-500°C	14,2

2. Processing recommendation

2.1 Design

The design is created using suitable CAD software, taking dental technology rules into account. Avoid wall thicknesses of less than 0.35 mm in the CAD model. Increase the wall thickness at critical points. Make the connectors as strong and high as possible (height: at least 3.5 mm, width: at least 2.5 mm).

2.2 Milling

Please use suitable tools and cutting data in accordance with the manufacturer's specifications for the dental milling machine.

2.3 Firing the ceramic after framework fabrication

Commercially available normal-fusing ceramic veneers for cobalt-based fusing alloys with a suitable coefficient of thermal expansion can be used. Please observe the relevant working instructions and the ceramic manufacturer's specifications regarding the cooling rate after firing. After framework fabrication:

- Cut off the connectors and finish. Carbide burs are recommended for this.
- Sandblast the framework surface in a stylus blaster with 100 µm or 250 µm aluminum oxide.
- Clean the framework in distilled water with ultrasound or with ethyl acetate degreasing agent.
- Oxidation firing (optional for checking the surface) for 5 minutes at approx. 960 °C under vacuum. After firing, always blast the oxide layer again and degrease it once more.

Note: A clean surface is the best protection against bubbles in the ceramic.

- Apply a thin wash firing, then fire the second base material evenly to achieve full coverage. Always allow the opaque to dry thoroughly at 600 °C for 5-10 minutes before firing.
- Fire and cool according to the manufacturer's instructions for the ceramic material used.
- For long-term cooling, carry out a cooling phase to approx. 750 °C after each dentine, correction, and glaze firing.

2.4 Final steps

After firing the ceramic, rubberize any unveneered parts of the framework and polish to a high gloss using a polishing paste for dental alloys or rotating polishing tools.

2.5 Soldering and welding

Solder before firing using commercially available solder and the appropriate high-temperature flux. The width of the solder gap should be 0.05-0.2 mm. Laser weld using commercially available laser welding wire.

Safety instructions

Metal dust is harmful to health. Use extraction when finishing and blasting. Hypersensitivity to alloy components must be taken into account. If intolerance to individual elements of this alloy is suspected, it should not be used.


Warranty

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

Hersteller / Manufacturer:
 German Special Alloys GmbH
 Carl-Friedrich-Benz-Str. 1b
 D-47877 · Willich · Germany

Distribution by: dentona AG
 Feldbachacker 16 | 44149 Dortmund
 Phone: +49 (0) 231 - 55 56 - 0
 Fax: +49 (0) 231 - 55 56 - 30

 Batch number

 Please observe the instruction for use
 (also available at www.dentona.de)

 Manufacturer

 Not for reuse