



## KERAMIT NP-S

Co-Cr based dental alloy for PFM - type 4

Co-Cr based dental alloy powder for laser sintering/melting

### CHEMICAL COMPOSITION

Co	Cr	W	Mo	Si	Nb
63%	24%	8%	3%	1%	1%

NICKEL AND BERILLIUM FREE

TECHNICAL DATA			
Density g/cm <sup>3</sup>	8.3	Yield strength MPa	490
Melting range °C	1305 - 1370	Elongation %	10
CTE 25-500°C 25-600°C 10-6K-1	13.9 - 14.0	Modulus of elasticity GPa	210
		Vickers hardness HV10/30	285

ISO 9693-1; ISO 22674

CORROSION RESISTANCE			
E <sub>ocp</sub>	E <sub>p</sub>	I <sub>300</sub>	I <sub>p</sub>
-128 mV	649 mV	4,34 μA·cm <sup>-2</sup>	37,33 μA·cm <sup>-2</sup>

ISO 10271

The high value of the breakdown potential (E<sub>p</sub> 649 mV) with the low current density at 300 mV (I<sub>300</sub> 4.34 μA·cm<sup>-2</sup>) indicate the excellent corrosion resistance of this alloy.

### CYTOTOXICITY TESTING

Cytotoxicity of KERAMIT NP-S alloy has been evaluated according to ISO 10993-5 standard, using the L-929 (mouse fibroblasts) cell line. Results have confirmed the perfect cytocompatibility of this alloy. Cells behavior and function were definitely similar to those measured in tests involving pure gold, that is the paradigmatic non-toxic material.

CE0546



The metal powder is dangerous to the health. The Co-Cr based alloys can rarely cause dermatitis by contact or allergies in sensitive subjects. Use suitable aspiration systems and individual protection devices during the working phases. Before applying the prosthetic medical device, verify if other metal implants are already existing in the oral cavity of the patient to prevent from galvanic phenomenon.

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## Post processing

To release the tensions in the sintered parts, a heat treatment of the whole platform with the structures attached should be carried out.

Furnace: dental furnace for pre-heating (e.g. PROGRAMIX Ugine Dentaire)

Reducing atmosphere: none

Start temperature: 19°C

Heating rate up to 250°C: FULL (20°C/min)

Holding time at 250°C: none

Heating rate up to 800°C: 420°C/h (7°C/min)

Final temperature: 800°C

Holding time at 800°C: 30min

Cool down: inside the switched-off furnace

When the platform is cooled down, one can proceed with the cutting and finishing of the sintered parts.

## Working and veneering indications

### PRE-SOLDER

- Excellent to laserweld
- We recommend to use specific solders for Co-Cr, according to manufacturer's instructions.
- Recommended pre-solder: KERAMIT NP SOLDER / SOLDER 1130

### CONDITIONING OF NON PRECIOUS ALLOYS BEFORE VENEERING

- Finish the sintered structure of KERAMIT NP-S with carbide burs
- Sandblast with 250 µm Al<sub>2</sub>O<sub>3</sub> ; 3.5 bar
- **Heat treatment is not necessary.** The structures are supplied already stabilized.
- Apply NM-Bonding (1)
- Proceed with veneering following the instructions of use of the porcelain manufacturer and the recommendations for the cooling phase (2)

### 1- FIRING PROGRAM NM BONDING

Starting Temp [°C]	Drying time [min:sec]	Closing time [min:sec]	Preheating [min:sec]	Heat rate [°C / min]	Final Tempù [°C]	Holding Time [min:sec]	Vacuum [%]	Slow cooling
650	02:00	02:00	02:00	55	980	00:00	100	-

### NOTE

Firing temperatures are given for guidance only. Variations may occur depending on the furnace used and the temperature may need to be adjusted accordingly.

### 2 - RECOMMENDATIONS FOR THE COOLING PHASE

Manufacturer	Veneering porcelain	Cooling phase
Dentsply	Ceramco iC	normal
Dentsply	Ceramco 3	normal
Willi Geller	Creation CC	normal
GC Europe	GC Initial MC	normale
DeguDent	Duceram kiss	slow
VITA Zahnfabrik	VITA VM 13	normal
VITA Zahnfabrik	VITA VMK Master	normal
Ivoclar	IPS InLine	normal
Wieland	REFLEX	normal
Noritake	EX-3 Superporcelain	normal
Dentaurum	Ceramotion Me	normal