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# Matchmate NP20

## Nickel-based dental metal-ceramic material
## Type 4 Beryllium Free
## Instructions for Use

### INTRODUCTION
Matchmate NP20 is a highly corrosion resistant beryllium free nickel chrome alloy, suitable for producing metalframeworks for bonding to porcelain. It is supplied in ingots Ø8mmx15mm. The oxide produced provides an exceptionally strong metallo ceramic bond.Long term cooling is unnecessary. It is manufactured inaccordance with EN ISO 22674:2016.

### INDICATIONS
Production of metal frameworks for veneering with bonding porcelain.

### CONTRA INDICATIONS
This product contains nickel and should not be used for patients who are sensitive to it. If the instructions are observed during the production processes, incompatibilities with NiCr alloys are extremely rare. In case of a proven allergy to an ingredient of this alloy, the alloy must not be used for safety reasons. When different alloy groups are used, galvanic effects might occur. Please inform your dentist regarding the contra-indications and side effects. Any serious incident that involves the product must be reported to the manufacturer and the competent authority in the accorded country.

### TYPICAL CHEMICAL COMPOSITION

| | |
|---|---|
| Nickel | 61.4% |
| Chromium | 25.9% |
| Molybdenum | 11% |
| Silicon | 1.5% |
| Other elements | <0.1% |

### WAXING
The wax pattern should be modelled with wax that burns out without residue, be designed without any sharp angles and provide an even thickness of porcelain. The pattern should be waxed-up so that the final wall thickness of the framework is at least 0.4mm after finishing.

### SPRUEING
Use the usual sprueing techniques. For indirect sprueing of larger or heavy castings use a 4-5mm diametertransverse sprue bar. This may be directly placed on the sprue cone or fed by 3-4mm diameter sprues from the the bar to the crowns, use sprue of 2.5-3mm diameter and 3mm length. Use direct technique for smaller bridges or single crowns with sprue of 3.5mm diameter and length 15-20mm.

Correct model design and sprueing will complete efficient filling of the mould and avoid suck-back during solidification and consequent shrinkage porosity.

### INVESTING & BURNOUT
Use a high carbon free ceramic investment such as Schottlander Rapicast and follow the manufacturer's recommendations for this type of alloy. When using Rapicast the temperature should be raised to 900°C and the hold temperatures specified for different size ringsshould be followed.

### MELTING & CASTING
Matchmate NP20 should be melted in a clean, preheated, contamination free ceramic crucible. Never use graphite crucibles or inserts.

***Maximum temperature for casting 1450°C.***

### FLAME MELTING
Use oxygen/propane in the ratio 2:1. Use a neutral adjusted flame to prevent over-heating of the alloy. Follow themanufacturer's instructions for casting machine settings. Do not use flux. Place new ingots in the pre heated crucible, move the flame in a circular motion over the ingots. Keep flame directed at ingots during melting. Start the casting procedure once the melting ingots have slumped and the melting becomes easier due to the flame pressure.

***CARE:*** *Do not allow the oxide skin to burst as this may lead to the loss of trace elements in the alloy.*

### HIGH FREQUENCY INDUCTION
Follow the instructions of the machine manufacturers. Start the casting cycle once all the ingots have slumped and two seconds after the last "shadow" has disappeared.

***CARE:*** *Cast before the oxide skin bursts as this may lead to the loss of trace elements in the alloy.*

**RE-MELTING**

**Recommendation – always use new alloy.**

The re-melting of sprues and buttons is not recommended because with repeated re-melting the concentration of trace elements decreases leading to a reduced metallo ceramic bond.

**DE-VESTING AND TRIMMING**

De-vest and then trim with tungsten carbide burs or aluminium oxide stones recommended for non precious alloys. The wall thickness should not be less than 0.3mm. Separate rotary instruments must be used for each alloy type. Grind in one horizontal direction only.It is recommended to sand blast with 110 micron aluminium oxide and 3-4 bar pressure.

**PORCELAIN APPLICATION**

Matchmate NP20 is compatible with with enliven MC, Matchmaker MC and most other feldspathic bonding porcelains. The highest recommended firing temperature is 1000°C.

Prepare for porcelain application as follows: Oxidation is not essential but if preferred degas for 10 minutes at 980°C in air (without vacuum). Sandblast with 125 micron aluminium oxide at 4-5 bar pressure. Clean as usual with distilled water in an ultrasonic bath or steam clean.

**A pickling bath should never be used.**

Apply the Opaque according to the manufacturer's instructions. A long term cooling is not necessary. Matchmaker CTE Buffer may be used to control the oxide formation. Do not plate with gold or other precious metals.

**FINAL CLEANING**

It is preferable to carry out final cleaning of finished work using an ultrasonic rather than a steam cleaner so as to avoid thermal shock.

**TYPICAL PHYSICAL PROPERTIES**

| | |
|---|---|
| Yeild strength 0.2% | 340 MPa |
| Elongation | 26.5 % |
| E-module | 178 GPa |
| Hardness | 185 HV 10/30 |
| Density | 8.43 g/cm$^3$ |
| CTE (25-500°C) | 14.1 x 10$^{-6}$K$^{-1}$ |
| Melting range | 1300 - 1360°C |
| Max Firing temperature | 980 °C |
| Tensile strength | 550 MPa |
| Corrosion resistance | <200 µg/cm$^2$ |
| Tarnish resistant | Yes |

**HEALTH & SAFETY**

The metal vapour and dust are harmful to health. Dust extraction and a respirator FFP3 according to BS EN 149 should be used.

Refer to Safety Data Sheet.

**STORAGE CONDITIONS**

Temperature, humidity or light has no effect on the product properties.

**DISPOSAL INSTRUCTIONS**

Consult the material safety data sheets or national regulations for disposal. Dispose of NP20 residues and dust in an environmentally friendly manner. Grinding dust must not enter groundwater, water bodies or sewers. Address waste exchanges for recycling.

**LOT NUMBERS**

The Lot number is shown on the outside of all containers.

This product is specifically formulated for use in dentistry.



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