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Matchmate NP20

Nickel-based dental metal-ceramic material
Type 3 Beryllium Free

Instructions for Use

INTRODUCTION
Matchmate NP20 is a highly corrosion resistant beryllium free nickel chrome alloy, suitable for producing metal frameworks for bonding to porcelain. The oxide produced provides an exceptionally strong metallo ceramic bond. Long term cooling is unnecessary. It is manufactured in accordance with EN ISO 22674:2006.

INDICATIONS
Production of metal frameworks for veneering with bonding porcelain.

CONTRA-INDICATIONS
This alloy contains nickel and should not be used for patients who are sensitive to it. Some electrochemical reactions or allergies may rarely occur caused by one or more elements of this alloy. Patients or users who have or are exhibiting such sensitivity should avoid using this alloy.

COMPOSITION

Chromium	25%
Molybdenum	11%
Silicon	1.5%
Carbon	<0,1%
Manganese	<0,1%
Nickel	Balance

WAXING
The wax pattern should 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 diameter transverse 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 rings should be followed.

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

FLAME MELTING
Use oxygen/propane in the ratio 2:1. Use a neutral adjusted flame to prevent over-heating of the alloy. Follow the manufacturer'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.*

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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.

PORCELAIN APPLICATION

Matchmate NP20 is compatible with 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

The proof strength of 0.2% non proportional extension 340 MPA.

Elongation	15%
Young's Modulus	170 GPA
Hardness	Hv10 185
Density	8.2 g/cm3
CTE (25-500°C)	$14.1\,10^{-6}\ K^{-1}$
Melting range	1310-1400°C
Casting temperature	1410°C

HEALTH & SAFETY

The metal vapour and dust are harmful to health. Dust extraction and suitable mask should be used.

Refer to Safety Data Sheet.

STORAGE

Store in a clean dry place.

LOT NUMBERS

The Lot number and expiry date are shown on the outside of all containers.

This product is specifically formulated for use in dentistry.