univeCAST

PoliDent

CONTENT

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PoliDent

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EN INSTRUCTIONS FOR USE

GENERAL AND SAFETY INSTRUCTIONS!

- There is a danger of flame occurrence during rapid heating, therefore keep the furnace door closed for at least 15 minutes after the insertion of the ring. During this period, do not insert any other rings into the furnace.
- Pay attention to the expiration dates of the powder and liquid. Do not use after their expiration dates.
- Polisol universal expansion liquid is suitable for rapid or slow heating.
- The investment material contains silica powder. Inhalation of this powder can be harmful and can cause irreversible damage to the lungs (silicosis, lung cancer).
- Open the investment material bag with scissors and avoid the formation of dust when filling the mixing bowl. Rinse the empty investment material bag with water before disposal.
- To avoid the formation of dust when removing the investment material from the object, place the cooled mould into water for a short time.
- When blasting the object, always use a fine-dust filter extraction system.
- Store the powder and liquid at room temperature (23°C/ 73,4°F). If exposed to temperatures at or below 5°C (41°F), the liquid will freeze and cannot be used thereafter.
- The investment material should not come into contact with plasters or plaster investment materials.
- The instructions apply for material and room temperatures of 23°C (73,4°F)

MODEL CASTING TECHNIQUE

MIXING POWDER AND LIQUID
Mixing ratio: 100 g powder / 22 ml liquid Time of
mixing in the vacuum mixer: 60 seconds
Processing time: 4 - 5 minutes

DUPLICATION AND INSERTION

	POWDER	LIQUID	CONCENTRATION OF EXPANSION LIQUID	
			%	Expansion liquid/distilled water
MODEL	300 g	66 ml	50%	33 ml / 33 ml
RING	300 g	66 ml	30%	20 ml / 46 ml
	450 g	99 ml	30%	30 ml / 69 ml

RECOMMENDATION: when duplicating the model using duplicating gel with 150 g of powder (1 model) and 33 ml of liquid (16.5 ml of expansion liquid and 16.5 ml of distilled water), we recommend that you:

- accurately measure the prescribed quantity of expansion liquid and water
- mix the investment material in the vacuum mixer for 100 seconds
- the temperature of the powder and liquid should not be lower than 23°C (73,4°F)

MODEL	DUPLICATING GEL	SILICONE
Model setting time	60 minutes	20 minutes
Model hardening	Cold or warm hardening as required.	Not necessary!

WARNING:
Special caution should be exercised when removing the duplicated model from the silicone. Use compressed air to help you.

HEATING

After the beginning of mixing, the ring is placed in the furnace for a period of	RAPID	SLOW
	15 - 20 minutes	15 - 20 minutes
Temperature of preheated furnace	900°C (1652°F)	250°C (482°F)
Heating	900 → 1000°C 1652 → 1832 °F	250°C → 900 – 1000°C 482°F → 1652 - 1832°F
Period of maintaining the end temperature	45 – 60 minutes (depending on cylinder size)	

WARNING: The temperature of the preheated furnace should not exceed 900°C (1652°F). After inserting it into the furnace, the ring can be heated up to 1050°C (1922°F).

CROWN AND BRIDGEWORK TECHNIQUE

MIXING POWDER AND LIQUID
Mixing ratio: 100 g powder / 22 ml liquid
Mixing time in vacuum mixer: 60 seconds
Processing time: 5 minutes

Ring size	POWDER	LIQUID
x 1	75 g	17 ml
x 3	150 g	33 ml
x 6	300 g	66 ml
x 9	450 g	99 ml

The higher the concentration of the expansion liquid, the higher the expansion of the mass.
Avoid increasing the density of the consistency, as this will substantially reduce the processing time and increase the mass expansion!

	Precious and semi-precious alloys with melting point below 1150°C		Precious and semi-precious alloys FOR CERAMICS		Non-precious alloys Ni-Cr		Non-precious alloys Co-Cr	
Ring size	Exp. liquid 25%	Dis-tilled water 75%	Exp. liquid 50%	Distilled water 50%	Exp. liquid 65%	Distilled water 35%	Exp. liquid 70%	Distilled water 30%
x 1	4 ml	13 ml	9 ml	8 ml	11 ml	6 ml	12 ml	5 ml
x 3	8 ml	25 ml	17 ml	16 ml	22 ml	11 ml	23 ml	10 ml
x 6	17 ml	49 ml	33 ml	33 ml	43 ml	23 ml	46 ml	20 ml
x 9	25 ml	74 ml	50 ml	49 ml	64 ml	35 ml	69 ml	30 ml

HEATING

After the beginning of mixing, the cylinder is placed in the furnace for a period of	RAPID	SLOW
	15 - 20 minutes	15 - 20 minutes
Temperature of preheated furnace	750 – 900°C 1382 - 1652°F	250°C 482°F
Heating	900 → 1000°C 1652 → 1832 °F	250°C → 900 – 1000°C 482°F → 1652 - 1832°F
Period of maintaining the end temperature	30 – 60 minutes (depending on ring size)	

WARNING: The temperature of the preheated furnace should not exceed 900°C (1652°F).
After inserting it into the furnace, the ring can be heated up to 1000°C (1832°F).

PRESSABLE CERAMIC TECHNIQUE

1. **Storage and working temperature**

Powder and liquid should be stored at room temperature (23±1)°C.
Storage and processing temperatures of the investment powder and liquid are important factors in determining the setting time and expansion, and hence the fit and the surface roughness of the pressed ceramic objects.
If the special liquid is stored at temperature below 5°C, it will freeze and cannot be used thereafter.
Processing temperature: Optimal processing temperature ensuring best results is **23±1°C**. Higher processing temperatures reduce processing time, lower temperatures prolong processing time.

2. **Preparations before investing**

Investment material is very fluid and can be used without any wetting agents. If a wetting agent is used, be sure to totally dry the surface prior to investing.
Use adequate silicone ring systems for the pressable ceramic technique for use with 100g and 200g of investment powder.
Powder/liquid ratio: Investment material powder is mixed with liquid which is diluted with distilled water.
Exact powder/liquid measurement is necessary to obtain stable results.

Ring size	Powder	Liquid
Small	100 g	22 ml
Large	200 g	44 ml

Expansion: The expansion of the investment can be controlled by the quantity of the distilled water mixed with the expansion liquid. The higher the concentration of the liquid, the higher total expansion of the investment. Use only distilled water to dilute.
The concentration can be freely adapted based on the working experience of the technician.

Liquid dilution chart:

Technique	Conc. (%) Liquid	100 g ring Liquid : distilled water	200 g ring Liquid : distilled water
Inlays	40%	9 ml : 13 ml	18 ml : 26 ml
Partial crowns, veneers, single crowns	45%	10 ml : 12 ml	20 ml : 24 ml
3-unit bridges	40%	9 ml : 13 ml	18 ml : 26 ml
Press on metal and ZrO2 frameworks	50%	11 ml : 11 ml	22 ml : 22 ml

Please note that influences such as increased room temperature, increased material temperature, method and model type (wax, plastic, wax/plastic combination) etc. may affect the processing properties or final result.

3. **Mixing**

Pre-mix powder and liquid thoroughly by hand with a spatula. Be sure all powder is wetted out by the liquid to give a uniform mixture. Mix for 60 seconds under vacuum (400 rpm).

Always use a clean mixing bowl and check vacuum level. Insufficient vacuum leads to differences in fit and air-bubbles of the pressed objects.
Processing time: At least **4 minutes** pouring time including the mixing time at room temperature (23°C).

Processing time/pouring time depends on the temperature of powder and liquid and on the room temperature. Higher temperatures shorten the processing time.

4. **Investing**

Invest under gentle vibration (low frequency). Investment material is very fluid, so strong vibration is not necessary and not advisable.
From the moment the ring is totally filled, stop vibration immediately and do not touch the investment until set.
Setting time: **Leave to set for 20 minutes from the start of mixing**.
Best results are obtained by putting into a preheated furnace immediately after 20 min setting time. Scrape the top surface of the mould with a sharp knife/sandpaper.

5. **Heating procedure**

	Quick heating	Conventional step heating
Insertion temperature	850°C	250°C
Holding time at 250°C		60 min
250°C → 570°C, heating rate		9°C / min
Holding time at 570°C		30 min
570°C → end temperature, heating rate		9°C / min
End temperature	850 - 900°C	850 - 900°C
Holding time at end temperature (depending on size of cylinder)	45 – 60 min	45 – 60 min

Preheating temperature: Always place the set investment ring in the burnout furnace at 850°C.
WARNING: When the mould is placed into the furnace, the preheated furnace temperature should not exceed 850°C. Then heat up to higher temperature (900°C) if required.
Due to aggressive burning out, do not open the furnace during the first 15 minutes.
In case several moulds are put into the furnace at the same time, prolong the heating period of each step for 10 minutes.
Holding time, after the preheating temperature of 850°C:
- 100 g ring – min. 45 minutes
- 200 g ring – min. 60 minutes

6. **Pressing the ceramic and press plungers**

Follow carefully the instructions for use of the pressable ceramic.
Press sequence should start as soon as possible after removing the mould from the furnace.
Standard Alox plungers and one-way investment plungers can be used.

7. Cooling

Follow carefully the instructions for use of pressable ceramic.

3D CROWN PRINTING TECHNIQUE AND BRIDGES FROM NON-PRECIOUS ALLOYS

The instructions specify the use of Univecast investment material for casting 3D printed crowns and bridges made of Poli3Dent CAST resin and for casting non-precious dental alloys.

PREPARATION

After printing, a 3D printed object must be additionally hardened in accordance with the instructions for use of 3D resin. Before investing with the investment material, check the accuracy of the fit of the 3D printed dental replacement on the model.
The 3D printed object must be attached to the cylinder base with wax feed sprues in such a way that the distance between the object and the edge and top of the cylinder is at least 10 mm.
For investing with the investment material, silicon cylinders (size 3 or 6) or metal cylinders (size 3, 6 or 9) can be used. When using metal cylinders, line the inside of the metal cylinder with slightly moistened ceramic strips before investing.
Use the following:
1 strip layer for size 3 cylinder
2 strip layers for size 6 and 9 cylinders

MIXING POWER AND LIQUID

Mixing ratio: **100 g of powder/22 ml of liquid**
Mixing time in the vacuum mixer: **60 seconds**
Processing time: **5 minutes**

Cylinder size	POWDER	LIQUID
x 1	1 x 75 g	17 ml
x 3	1 x 150 g	33 ml
x 6	2 x 150 g	66 ml
x 9	3 x 150 g	99 ml

Powder and liquid should first be mixed manually for 30 second and then in the vacuum mixer for another 60 seconds.

First, fill the crowns with the investment material using a fine brush. Fill the cylinder with the investment material on the vibrator at a low vibration level. When the cylinder is filled to the top, turn off the vibrator.

CONCENTRATION OF LIQUID

The stated concentrations of liquid used for casting crowns and bridges from non-precious dental alloys are approximate and may be adjusted by the dental technician based on the working conditions and object size.
The higher concentration of the expansion liquid, the greater the expansion of the investment material.

Concentration of the PoliSol liquid in %		50%	60%	70%	80%	90%
75g / 17ml	PoliSol / H2O	8,5 / 8,5 ml	10 / 7 ml	12 / 5 ml	14 / 3 ml	15 / 2 ml
150g / 33ml	PoliSol / H2O	16,5 / 16,5 ml	20 / 13 ml	23 / 10 ml	26 / 7 ml	30 / 3 ml
300g / 66ml	PoliSol / H2O	33 / 33 ml	40 / 26 ml	46 / 20 ml	53 / 13 ml	59 / 7 ml
450g / 99 ml	PoliSol / H2O	49,5 / 49,5 ml	59 / 40 ml	69 / 30 ml	79 / 20 ml	89 / 10 ml

Approximate mixing ratio between the expansion liquid and distilled water for casting crowns and bridges from non-precious dental alloys:

	Ni-Cr non-precious alloys		**Co-Cr non-precious alloys**	
Cylinder size	Exp. liquid **65%**	Dist. water **35%**	Exp. liquid **70%**	Dist. water **30%**
x 1	11 ml	6 ml	12 ml	5 ml
x 3	22 ml	11 ml	23 ml	10 ml
x 6	43 ml	23 ml	46 ml	20 ml
x 9	64 ml	35 ml	69 ml	30 ml

The investment material is recommended to set for 20 minutes at a temperature of 23°C.
Applying pressure during setting is not advised.

HEATING

Heating	**QUICK HEATING**	**SLOW HEATING**
Cylinder size	silicon or metal cylinders (sizes x1, x3, x6)	metal cylinder (size x9)
Time after initiating mixing when the cylinder in placed into furnace	20 minutes	20 minutes
Pre-heated furnace temperature	900°C	250°C
Heating	900°C	250°C → 900°C (9°C/min)
Holding time at end temperature	90 minutes (sizes x1, x3) - 120 minutes (sizes x6, x9)	

When the cylinder is placed into the furnace, preheated furnace temperature should not exceed 900°C.
Place the moulds filled with the investment material in the furnace with the feed sprues facing the rear of the furnace.

Casting the dental alloy should be carried out according to the instructions of the alloy's manufacturer.
After casting, leave the moulds made of the investment material to cool down to a temperature that allows you to hold them in your hand. **Do not cool the investment material using cold water!**

Roughly remove the investment material from the casting using pliers, followed by sanding to remove any oxides on the surface of the casting, and place the casting on the base model.