

N&V Z4 INSTRUCTIONS

MIXING

- 01 Obtain the proper liquid/water concentration for the specific restoration you are investing (see chart below)
- 02 Pour the necessary amount of powder into a clean mixing bowl
- 03 Pour corresponding amount of liquid/water into bowl on top of powder
- 04 Hand mix the investment until powder is completely wet
- 05 Mix mechanically under vacuum for 50 seconds

TIP With Z4 optimum results are achieved by placing powder in the bowl before the liquid.

TIP For best results make sure vacuum mixing unit is pulling 27" Hg or more of vacuum.

TIP Mixing speed should be between 350 – 450 rpm.

INVESTING + BENCH SET

- 01 When investing tight areas inside copings use an instrument with very light vibration to fill copings
- 02 Fill the remainder of the cylinder by slowly pouring investment in a thin stream into the cylinder using no vibration
- 03 Allow cylinder to bench set undisturbed for a minimum of 30 minutes

TIP Make sure that your wax patterns are clean and dry of any residues, such as die lube or debubbler, before investing.

TIP For larger cylinders allow for an extra 10-20 minutes of bench set as molds should be mostly cool and dry before placing into burnout furnace.

TIP If metal rings are being used do not wet ring liner.

BURNOUT/PREHEAT: RAPID CAST

- 01 Place cylinder into a hot burnout furnace at a temperature of 850°C (1560°F)
- 02 Allow cylinder to heat soak for at least 30 minutes. Add an additional 5 minutes for cylinders larger than 100 grams and for each additional cylinder you are burning out
- 03 Maximum starting temperature is 900°C (1650°F) but if necessary can be raised higher once cylinder is placed in furnace

BURNOUT/PREHEAT: TRADITIONAL

- 01 Place cylinder into furnace at room temperature and raise to end temperature at 14° to 20°C (25° to 40°F) per minute
- 02 Allow cylinder to heat soak at end temperature for at least 30 minutes. Add an additional 5 minutes for cylinders larger than 100 grams and for each additional cylinder you are burning out

TIP With Z4, after the necessary bench set, you can place cylinders directly into a hot furnace at any time. Meaning you can place cylinders directly into the hot furnace even after they have set on the bench overnight.

TIP For most plastic patterns, bars and copings we recommend a normal burnout be used.

CASTING ALLOY

- 01 Heat alloy according to alloy manufacturer's directions making certain not to overheat the alloy
- 02 Making sure that the cylinder is heated to the temperature indicated by the alloy manufacturer is very important as overheating cylinders can cause rough castings and finning
- 03 When devesting an alloy casting most of the investment can be removed by lightly tapping the cylinder with a hammer
- 04 Blasting should be very light and clean

TIP Z4 requires the cylinder to be preheated to 850°C (1560°F) for optimal results. However some casting alloys require the cylinders to be at a lower temperature to cast properly. Due to the density of Z4 it holds it heat longer than other investments so we will explain two methods you can use to achieve the proper cylinder temperature.

A Once the cylinders have been preheated for necessary time at end temperature you can place them into a furnace that is at a lower temperature and allow them to remain in the cooler furnace for 45 minutes or longer depending upon cylinder size.

B You may also use the "bench cool" technique. To do this you take the cylinder out of the burnout furnace and allow it to sit for 1 - 3 minutes in the casting machine before starting to melt alloy. This will allow the cylinder to cool to a lower temperature and the time it needs to cool depends on how low of a temperature the alloy needs. It usually requires a longer cooling time with Type III and other similar alloys.

PRESSABLE CERAMICS

- 01 After necessary burnout process cylinder according to glass manufacturer's instructions
- 02 Z4 investment only requires the use of 4 bars (60 psi) of pressure during pressing cycle
- 03 After pressing and cool down reduce bulk investment as normal
- 04 Blasting should be very light and clean

TIP Do not remove leveler or ring until the cylinder has bench set for at least 30 minutes. If after removed the cylinder is not mostly dry and cool allow to bench set for an additional 10 minutes.

TIP Be careful when removing the "nub" left from leveler as use of model trimmer or sandpaper can cause micro fractures in the cylinder and a wet model trimmer will also re-wet the ring.

TIP If you experience cylinder fracture in the pressing oven it could be related to different conditions in equipment (eg. age, calibration schedule, etc). You may add an additional 5 minutes to the hold time in the pressing cycle when the ingot is softening to allow ingot to soften properly and press easier.

WARNING: Investments contain free silica. Do not breathe dust. Excessive inhalation may cause lung injury. (Silicosis)

PHYSICAL PROPERTIES Liquid Powder Ratio: 22-24ml/100g • Working Time: ca. 6 minutes • Setting Expansion: 1.7% • Thermal Expansion: 1.2%

N&V Z4 LIQUID RATIO CHART

				60 GRAM 14.5ml per 60 grams		100 GRAM 24.0ml per 100 grams		
	EXPANSION	TYPE	CONCENTRATION	LIQUID (ML)	WATER (ML)	LIQUID (ML)	WATER (ML)	
ALLOYS	More expansion		*	13.0	0.0	22.0	0.0	
			*	14.0	0.0	23.0	0.0	
	Optimum expansion	Non-precious	100%	14.5	0.0	24.0	0.0	
		Palladium based	85%	12.5	2.0	20.0	4.0	
		Noble	75%	11.0	3.5	18.0	6.0	
		High Noble	65%	9.5	5.0	16.0	8.0	
	Less expansion		60%	8.5	6.0	14.5	9.5	
			50%	7.25	7.25	12.0	12.0	
	PRESSABLE CERAMICS	More expansion		*	14.0	0.0	23.0	0.0
				100%	14.5	0.0	24.0	0.0
Optimum expansion		Crowns/Veneers/Onlays	95%	13.5	1.0	23.0	1.0	
		Inlays	80%	11.5	3.0	19.0	5.0	
Less expansion			70%	10	4.5	17	7	
			60%	8.5	6.0	14.5	9.5	

* If you are using the expansion ratio of 100% liquid, for example 24ml liquid + 0ml water per 100 grams powder, and more expansion is needed it is possible. To obtain this extra expansion you reduce the total liquid concentration by 1ml to 23ml straight liquid per 100 grams of powder. If this is not enough expansion then reduce to 22ml straight liquid per 100 grams of powder. When using this method you DO NOT use any water. As a general rule to increase expansion use more expansion liquid and less water, to decrease expansion use less expansion liquid and more water.



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