

납형의 직경 및 소환방법이 도재-금속 보철물용 비귀금속 합금의 주조성에 미치는 영향

고려대학교 보건전문대학 치기공과

ABSTRACT

Effect of Two Variables on the Casting Ability of Some Nonprecious Alloys for Porcelain-Metal Restorations

Uoong Chul Kim

Dept. of Dental Laboratory Technology, Junior College of Public Health and Medical Technology, Korea University, Seoul, Korea

This Experimental study was performed to study the effect of the heat soaking and the diameter of pattern on the casting ability of three nonprecious alloys manufactured for porcelain-metal restorations, with respect to their ability to reproduce test pieces by casting over a selected range of uniform diameters.

Samples of total 60 were constructed and divided into 6 groups according to the two variables, the diameter and the heat soaking. The completed cast samples were examined visually and measured with a caliper calibrated to 0.05mm.

The results obtained were as follows:

1. Length cast was significantly related to the diameter to be cast, especially in the case of the narrowest diameter of 230m.
2. Length cast not significantly related to the heat soaking.
3. The completeness of casting was significantly related to the diameter to be cast, particularly in the case of the narrowest diameter of 230m.
4. The completeness of casting was not significantly related to the heat soaking.
5. All of the three nonprecious alloys used for this experiment were significantly different from an ideal alloy in the completeness of casting.

1. 서론

1970
nickel-chromium
가 , - ,
가 , - ,
, , , ,
19

(ultimate tensile strength),
(resistance to permanent deformation)

2. 실험방법

1)

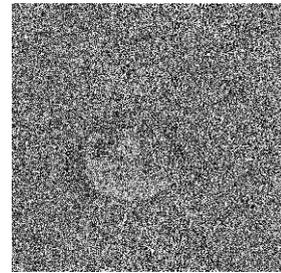
rubber wheel 3mm,
10mm
가
300 μ m, 230 μ m 680 μ m, 510 μ m, 370 μ m,
5mm

Cyanoacrylate

model (1)

Stone resin
mold

Civijan Vincent



1. rubber wheel
model

stone stone index stone
resin

resin resin stone

stone
mold (2)
mold

5 hole
6mm stone

1mm wax
mold wax
blue inlay wax()

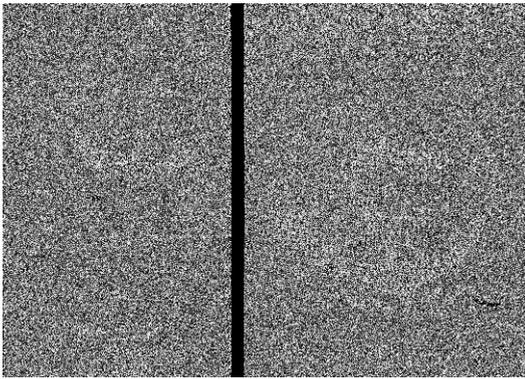
가 60
(3)

II. 실험대상 및 방법

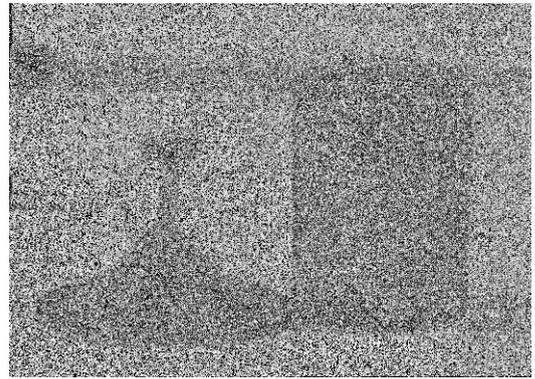
1. 실험대상

Rexillium (Jeneric Gold
Co., U.S.A), Vera Bond(Chosun Dnetal Corp.,
U.S.A), Pentillium(Pentron Corp.
U.S.A) 3

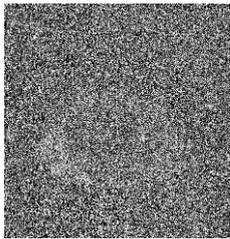
가 -



a. 2. b. mold



4. ring
6mm



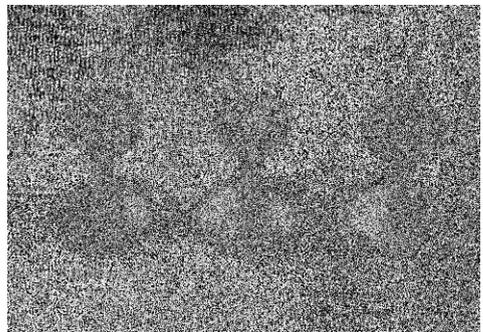
3. mold

60
ringA
가
Rexillium $5.03 \pm 0.45\text{gm}$, Vera Bond $6.68 \pm 1.04\text{gm}$, Pentillium $5.10 \pm 0.22\text{gm}$
Rexillium Pentillium
gas , Vera Bond
- dml gas

2)

wax
ring (4)
ring Biovest U.S.A)
3mm, 12mm
6mm 가
30mm, 38mm
0.75mm
(Dentsply international Inc.,
(liquid/powder : 0.18)

50mm aluminum oxide 가
Sand blasting .(5)



5. 가

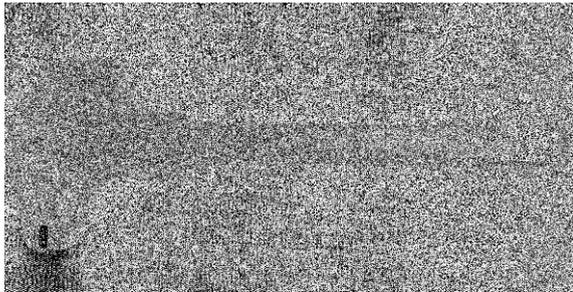
ring
Rexillium 1 1,800 , Vera Bond
Pentillium 1 30 1,600
2
1

3)

10 , Vera Bond 20 , Rexillium Pentillium 가 5mm (pin 가

가
rest
pin ()
pin)
가 0.05mm caliper(Mitutoyo, Japan)
(6)
: 가 5mm
: 1 - 가 1
2.95mm , 2 -
가 3 4.5mm
: 가 1mm

가 5mm
230 μ m
Pin
Pentillium
(P<0.01),
dptj



6. pin

caliper

Fisher Yates(3) Table xx

(2) + 1.03
(1) + 0.3
- 0.3
- 1.03

680 μ m 510 μ m

III. 실험결과

300 μ m, 230 μ m, 370 μ m,
pin
(P<0.01),
가

pin
dptj
680 μ m 510 μ m
pin 가 5mm
370 μ mdml

pin 가 5mm

Pentillium 2가 t-

Bond 가 Vera

300 μ m 230 μ mdml 가 (P<0.01)

(: mm)

직 경 (μm)	조사수	항 목	Rexillum		Vera Bond		Pentillium	
			제 1계열	제 2계열	제 1계열	제 2계열	제 1계열	제 2계열
680	10	산술평균	5.00	5.00	5.00	5.00	5.00	5.00
		표준편차	0.00	0.00	0.00	0.00	0.00	0.00
510	10	산술평균	5.00	5.00	5.00	5.00	5.00	5.00
		표준편차	0.00	0.00	0.00	0.00	0.00	0.00
370	10	산술평균	4.99	5.00	4.96	5.00	5.00	5.00
		표준편차	0.03	0.00	0.13	0.00	0.00	0.00
300	10	산술평균	4.89	4.99	4.89	4.95	4.91	4.98
		표준편차	0.10	0.05	0.14	0.12	0.12	0.04
230	10	산술평균	4.41	4.67	4.24	4.41	4.03	4.36
		표준편차	0.59	0.47	0.80	0.43	0.81	0.66

※ 제 1계열 : 열 계류 무

제 2계열 : 열 계류 유

변동요인	자유도	Rexillum		Vera Bond		Pentillium	
		불편분산	F (확률의 크기)	불편분산	F (확률의 크기)	불편분산	F (확률의 크기)
직 경	4	0.814	13.99**	6.936	20.43**	2.542	23.2**
소환방법	1	0.144	2.48	0.073	0.86	0.160	1.00
실험오차	4	0.064		0.098		0.102	
표본오차	90	0.058		7.879		0.110	

** : $p < 0.01$

(:)

합	금	직 경 (μm)				
		680	510	370	300	230
Rexillum	제 1계열	10	10	9	1	0
	제 2계열	10	10	10	9	2
Vera Bond	제 1계열	10	10	9	5	0
	제 2계열	10	10	10	8	0
Pentillium	제 1계열	10	10	10	4	0
	제 2계열	10	10	10	6	0

* 각 군의 표본수는 각 10개씩임.

제 1계열 : 열계류 무

제 2계열 : 열계류 유

직 경 (μm)	조사수	항 목	Rexillium		Vera Bond		Pentillium	
			제 1 계열	제 2 계열	제 1 계열	제 2 계열	제 1 계열	제 2 계열
680	10	산술평균	1.03	1.03	1.03	1.03	1.03	1.03
		표준편차	0.00	0.00	0.00	0.00	0.00	0.00
510	10	산술평균	1.03	1.03	1.03	1.03	1.03	1.03
		표준편차	0.00	0.00	0.00	0.00	0.00	0.00
370	10	산술평균	0.96	1.03	0.96	1.03	1.03	1.03
		표준편차	0.23	0.00	0.23	0.00	0.00	0.00
300	10	산술평균	0.37	0.96	0.67	0.88	0.59	0.74
		표준편차	0.23	0.23	0.38	0.31	0.38	0.38
230	10	산술평균	0.24	0.45	0.24	0.30	0.24	0.30
		표준편차	0.19	0.31	0.19	0.00	0.19	0.00

*제 1계열 : 열계류 무
제 2계열 : 열계류 유

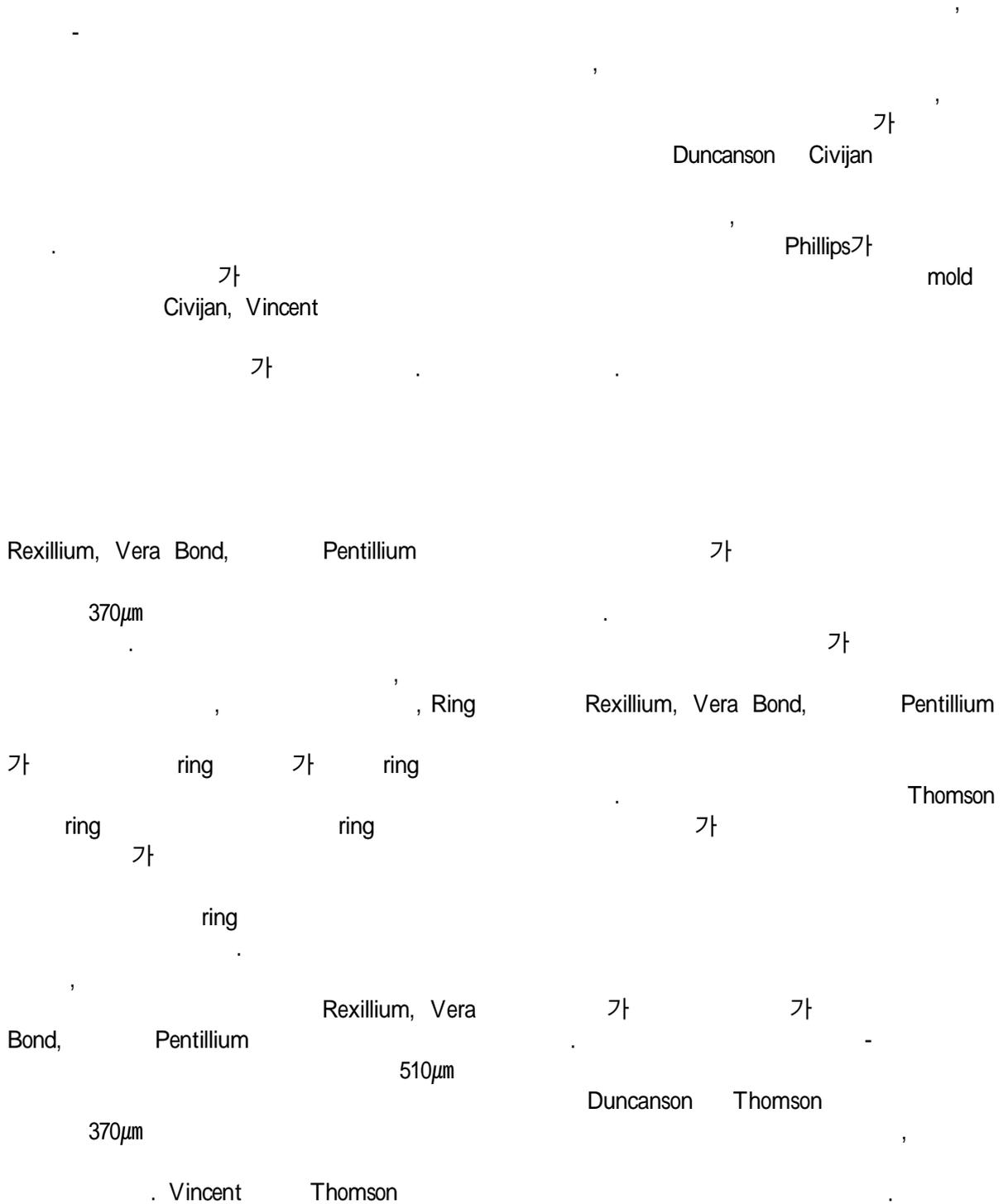
변동요인	자유도	Rexillium		Vera Bond		Pentillium	
		불편분산	F (확율의 크기)	불편분산	F (확율의 크기)	불편분산	F (확율의 크기)
직 경	4	1.848	6.16**	2.114	63.10**	2.289	72.57**
소환방법	1	0.745	2.46	0.124	3.70	0.042	1.33
실험오차	4	0.300		0.040		0.021	
표본오차	90	0.041		0.033		0.032	

** : $p < 0.01$

	Rexillium		Vera Bond		Pentillium	
	제 1 계열	제 2 계열	제 1 계열	제 2 계열	제 1 계열	제 2 계열
조 사 수	10	10	10	10	10	10
산 술 평 균	0.90	0.73	0.85	0.78	0.83	0.78
표 준 편 차	0.28	0.39	0.31	0.37	0.33	0.37
U	1.03	1.03	1.03	1.03	1.03	1.03
t - 값	3.32**	5.58**	4.11**	4.78**	4.29**	4.78**

U : 완전구조체의 값, ** : $p < 0.01$ 제 1계열 : 열계류 무
제 2계열 : 열계류 유

IV. 총괄 및 고안



V. 결 과

	가	
	3mm,	
10mm		
680 μ m, 510 μ m, 370 μ m, 300 μ m,	230 μ m	pin
	60	
Rexillium, Vera Bond,	Pentillium	3 pin
1.		
	370 μ m	
2.		
	370 μ m	
3. 가		

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