

치과 보철물 제작시 사용되는 Sprue의 재료 및 형태가 비귀금속 합금의 주조성에 미치는 영향에 관한 연구

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= Abstract =

A Study on the Castability of Base Metal Alloys Which Sprue Shape and materials used in the Production of Dental Prosdontics

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In order to examine the influence of sprue(used to make crown supplements) on casting, 3 kinds of sprue materials(wax, wood, plastic) and 3 types of sprue(round, square, triangle) were made and buried and cast, then the comparison and analysis of casting characters among sprue materials and among sprue type show the following results :

1. The comparison of casting characters in accordance with sprue materials shows wax sprue of 83.3%, wood sprue 81.3%, and plastic sprue of 80.7%, Wax sprue was the bast materials for casting, However there was no statistically significant difference of casting characters among was, plastic and wood.
2. The comparison of casting in accordance with sprue types shows square sprue of 94.0%, round sprue of 86.9% and triangle sprue of 84.2%. square sprue had a best casting character.
3. When a ring cast using wood sprue was classified from burying materials. its cutting of casting body and sprue indicated much more than any other sprue material. It seems to be caused by the influence of wood residuals and carbon occurrence.

차 례

pattern)

1.

2.

1)

investment (lost wax)

가

2)

3) (Investing)

4) (Burn out)

가

5) (Casting)

6)

I. 서 론

Inlay wax

Inlay wax,

가

가

가

가

가

가

가

가

wax spure

spure

(Ultimate tensile

plastic sprue,

long bridge spruing

strength),

(resistance to pelmanent deformation)

wood sprue

spure

가

spure

가

(Wax

II. 실험 재료 및 방법

1. 실험재료

Screen mesh 12gauge 1/2 round casting wax
 , sprue ring 3 (ring 1
 Pattern 3) wax sprue,
 ring 3 plastic sprue 3 ring
 wood sprue
 sprue
 wax sprue
 Hi-Temp Investment ring
 sprue metal partial

denture ring(90mm x 60mm)
 crown &
 bridge ring(50mm x 60mm)
 metal
 New crown metal(ring 20g,
 ring 10g)
 (. 1, 2)

2. 실험방법

1)
 Sprue

(Plastic screen

1. Physical Properties of Hi-temp investment

Liquid*/Powder ratio	—————	16 L/100 g
Working Time	—————	7~8 minutes
Setting Expansion	—————	0.7%
Thermal Expansion	—————	1.2%
Compressive Strength, Wet	—————	1,500 Psi(10 MPa)

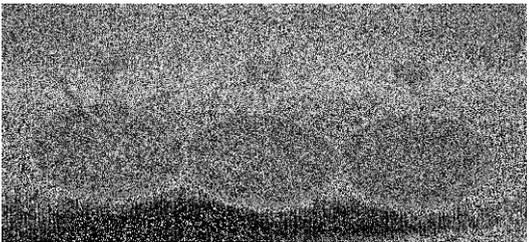
* Suggested concentration of Special liquid is 75%
 (3 parts liquid to 1 part water)

2. Physical Properties of materials or instruments

Plastic screen mesh (Korea)
 Casting wax (Han Denk Chemistrys, Korea)
 Crucible former (Korea)
 Plastic sprue (Korea)
 Wood sprue (Korea)
 Asbestos liner (Korea)
 New crown metal (Japan)
 Electric furnace (Sae Ki Electronics Co, Korea)
 Casting machine (Kerr Co., U.S.A)
 Sand blaster (Sae Ki Co., Korea)

mesh) 19mm x 14mm cutting
 12gauge 1/2 round wax
 3 U
 sprue sprue
 wax sprue, plastic sprue,
 wood sprue ring 1 3
 sprue 3 ring
 sprue
 10 gauge round casting
 wax sprue, sprue
 3 ring 1 sprue
 Pattern
 1/4inch(6mm) (rubber
 crucible former) .(1, 2)

2)
 Plastic screen mesh
 pattern wax, plastic, wood sprue
 1 ring pattern 3
 ring 9 , pattern 27
 1 ring 1
 pattern ring
 pattern 9 , 10
 gauge wax , ,
 sprue sprue 3
 pattern sprue
 40mm, 30mm
 .(1, 2)

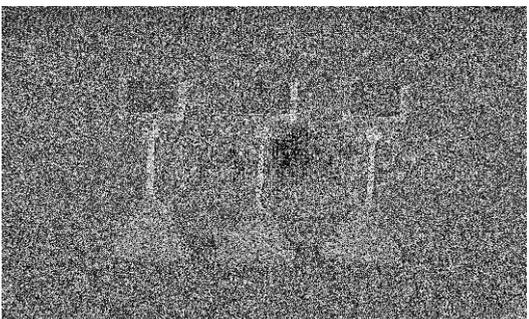


A. wax B. Plastic C. Wood
 1. Sprue

3. (Sprue)

Materials Number	Wax Sprue	Plastic Sprue	Wood Sprue	Total
A ring	3	3	3	9
B ring	3	3	3	9
C ring	3	3	3	9
Total	9	9	9	27

* ring A, B, C는 큰 의미는 없고 ring 3개를 표시하기 위해 사용한 명칭임.



A. round B. square C. triangle
 2. Sprue

4. (sprue)

Sprue shape Number	Round	Square	Triangle	Total
A ring	1	1	1	3
B ring	1	1	1	3
C ring	1	1	1	3
Total	3	3	3	9

* ring A, B, C는 큰 의미는 없고 ring 3개를 표시하기 위해 사용한 명칭임.

casting ring bench (1 160)
cooling 50µm casting body 9 sprue
aluminum oxid sand sand blasting
.(3, 4) 6, 5
6) sprue wax sprue
83.3%, wood sprue 81.3%, plastic sprue 80.7%
Sprue wax sprue가 가
Sprue sprue가
Wax sprue, Plastic sprue, Wood sprue
ring 3 (ring 1 Pattern 3)
9 Pattern(1 pattern 160)
(6, casting body
5) Sprue Round, 160) (casting body 1
Square, Triangle sprue ring 3 7, 6
(ring 1 pattern 1) Sprue sprue
sprue 94.0%, 86.9%, 84.2%
sprue가 가
SPSS ANOVA
.(7, 6)

III. 실험결과

Sprue 가
sprue setting
wax sprue
plastic sprue, 가
long bridge sprue Plastic
wood sprue sprue wood sprue
ring(partial denture) 3
sprue Wax sprue
body sand blasting casting mesh pattern

6. Sprue

Sprue materials	Mean	std. Deviation	std. Error	F	P
Wax sprue	83.2500	6.1572	2.5137		
Plastic sprue	80.7333	7.1743	2.9289	0.203	0.818
Wood sprue	81.2667	8.1422	3.3240		
Total	81.7500	6.8577	1.6164		

sprue wax pattern venting,
 investment mold 가 가
 가 , mold ,

sprue 가 가

sprue 가 sprue

sprue wax pattern
 sprue 가 casting wax ring
 plastic sprue 가 (blow piper)
 wood sprue
 가 sprue
 sprue 가
 sprue

sprue 3가 (wax sprue, plastic sprue,
 wood sprue) (, ,) 3
 가

ring blow
 piper metal , casting time

ring 가 가

sprue wax sprue 80.7%, wood sprue 81.3%,
 plastic sprue 80.7% wax sprue 가 가

sprue 94.0%, sprue 86.9%, sprue 84.2%
 sprue가 가 가

sprue

V. 결 론

sprue가 sprue
 3 (Wax, wood, plastic) Sprue 3
 (, ,) , sprue ,

1. Sprue wax sprue 83.3%, wood sprue 81.3%,
 plastic sprue 80.7% , wax sprue가 가
 , Sprue Wax, Plastic, Wood

2. sprue sprue가 94.0%, 86.9%,
 84.2%, sprue가 가

3. wood sprue casting ring
 sprue가 cutting casting body sprue

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