

치과정밀주조에 활용되는 Air-Vent의 효과에 관한 연구

지산전문대학 치기공과

부교수

Abstract

A Study on The Effect of Air-Vent Utilized to Dental Precision Casting

Kim-Bu Sob

Dental Laboratory Technology, Jisan Junior College.

On purpose of relative comparison of between air-vent attached pattern and non attached one, casting tests were accomplished by castability analysis unrig wax screen mesh pattern.

Experimental specimens are divided Into 4groups.

- 1) Air-vent attached pattern with high casting pressure(coil spring type centrifugal casting machine 2.5turn).
- 2) Air-vent attached pattern with low casting pressure(coil spring type centrifugal casting machine 1.5turn).
- 3) Air vent non attached pattern with high casting pressure(coil spring type centrifugal casting machine 2.5turn).
- 4) Air-vent non attached pattern with low casting pressure(coil spring type centrifugal casting machine 1.5turn).

The main results are as follows :

- 1) The condition of high casting pressure no.1, no.3 were showed perfect castability.
- 2) The condition of low-casting pressure, there is a wide difference between no.2, no.4 group. Castability of no.2 group preferable to no.4 group($p < 0.001$).
- 3) Low casting pressure and complex shape cause the low-castability. So it is recommended that use of air-vent in case of complex shaped wax pattern with low easting pressure.

1. 서론

investment
plaster moi

가 가
(背壓, back pressure)

가 가

가 was pattern 가
air-vent

가

Air vent

^{1,2,5,14)}

가

³⁾

air vent McLean,
長谷川 井田

Welse all-vent (sprue)

Rieger Vaidyanathan,

(mold)

(熔湯)

^{1,2,7-11)}

all-vent 가

(), ,

가

가

, , 가 ,

가

air-vent

¹⁾

가

가

air-vent

가

⁶⁻⁸⁾

(sprue)

가 (reservoir) sprue
porosity

air-vent 가
air-vent

air-vent

2. 시편 및 실험방법

2.1 시편제조

2.1.1

가 가

가

framework

metal base

fig.1 retention mesh wax(Dentaurum, Retentionsnetze Grids, RN , 0.7mm) 가 , 21.5mm 100

4 casting wax sprue

2.5mm sprue wax 48 2가

10mm 24 mesh wax crucible former

1.5mm 가 18gauge round wax air vent

sprue가

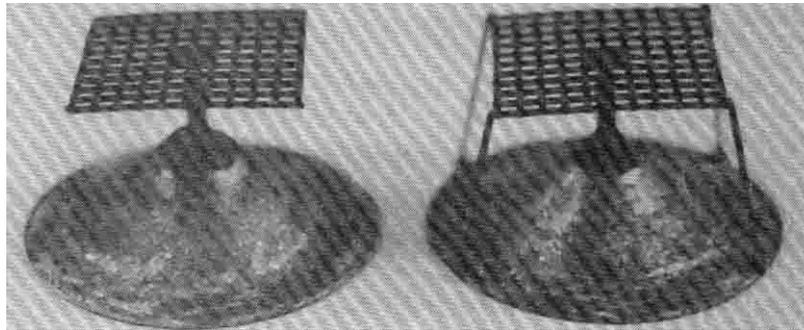


Fig. 1. Experimental Wax Pattern

2.1.2 1 2 L/P 0.25 12

1 sprue 3mm 가 3

sprue wax 850 1

6 , 6 air-vent (Kerr casting

2 machine) - Spring coil

Ni-Cr 가

6 12

2.2 실험방법

(Hi-Temp Casting Cr-Co (Dentaurum) Ni-Cr 2)

Investment, Whip mix co.)

(50mm) plastic pipe ringless

technique 2.2.1 1

wax pattern 1

liquid/powder 0.20, 2 2.5

2.3 측정방법

1 finishing

Cr-Co (Dentaurum)
12 air-vent 12

all-vent

air-vent

2.2.2. 2
2

air-vent
가

air-vent

1.5

3. 실험결과

Cr-Co 1
vent 12 air-

1 finishing 가

12 air-vent

1 1, 2

2.2.3

air-vent

Sprue

3mm

1 2.5
1, 2

Table 1 2

6 air-vent 6 air-vent

12

Table 2

2 Ni-Cr

air-vent

P<0.001 가

Table 1.
(Cr-Co , 1.5)

№	Air-vent 부착군	Air-vent 비부착군
1.	99	97
2.	100	98
3.	100	97
4.	100	88
5.	100	88
6.	100	89
7.	100	85
8.	100	84
9.	100	86
10.	100	94
11.	100	96
12.	100	83

Table 2.

Variable A By Variable CH	Air-vent method	Analysis of Variance			
Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	541.5000	541.5000	34.2492	.0000
Within Groups	22	347.8333	15.8106		
Total	23	889.3333			

4. 고 찰

air-vent pressure porosity back
 , 가 , ,
 hot spot reservoir 가 가
 air-vent crown
 unit가 가 가 air-vent가
 bridge, framework 가
 metal base, air-vent가
 coping
 McLean 가 가 2.5mm sprue wax
 1.5mm
 suck-back 가 가 pattern V S (Porosity) (V/S)
 가 가 pin-hole 가 .¹⁾
 porosity
⁴⁾ 가 wax pattern
 가 가 5 7mm 가
 가 井田 back pressure porosity 長谷川, 10mm air-
 가 vent 가
 가 air-vent
 가
 가

가
 1 2
 Ni-Cr(Sankin CB 80) 가 가
 가 가
 , burn-out
 1 2.5
 Co (Dentaurum) Cr- investment 가
 2 1.5
 Cr-Co air-vent 가
 air-vent 가 가
 가
 P<0.001
 (背壓, back pressere) blind vent 가 가

5. 결론

가 air-vent
 vent air-vent
 air-vent
 air-vent
 가 air-vent air-vent
 spring 24) (Coil
 (1.5) 2가 2.5)
 metal base 가 metal framework air-vent가 12
 가
 clasp tip 1. 1
 air-vent mold
 air-vent

2. vent 2 air-
 (p<0.01).
 3. mold air-
 vent .

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