

(Pozzolanic reaction)

(•)

150
2,000

가

(Pozzoli)

(Pozzolana)

(Pozzolan)

(Pozzolana)

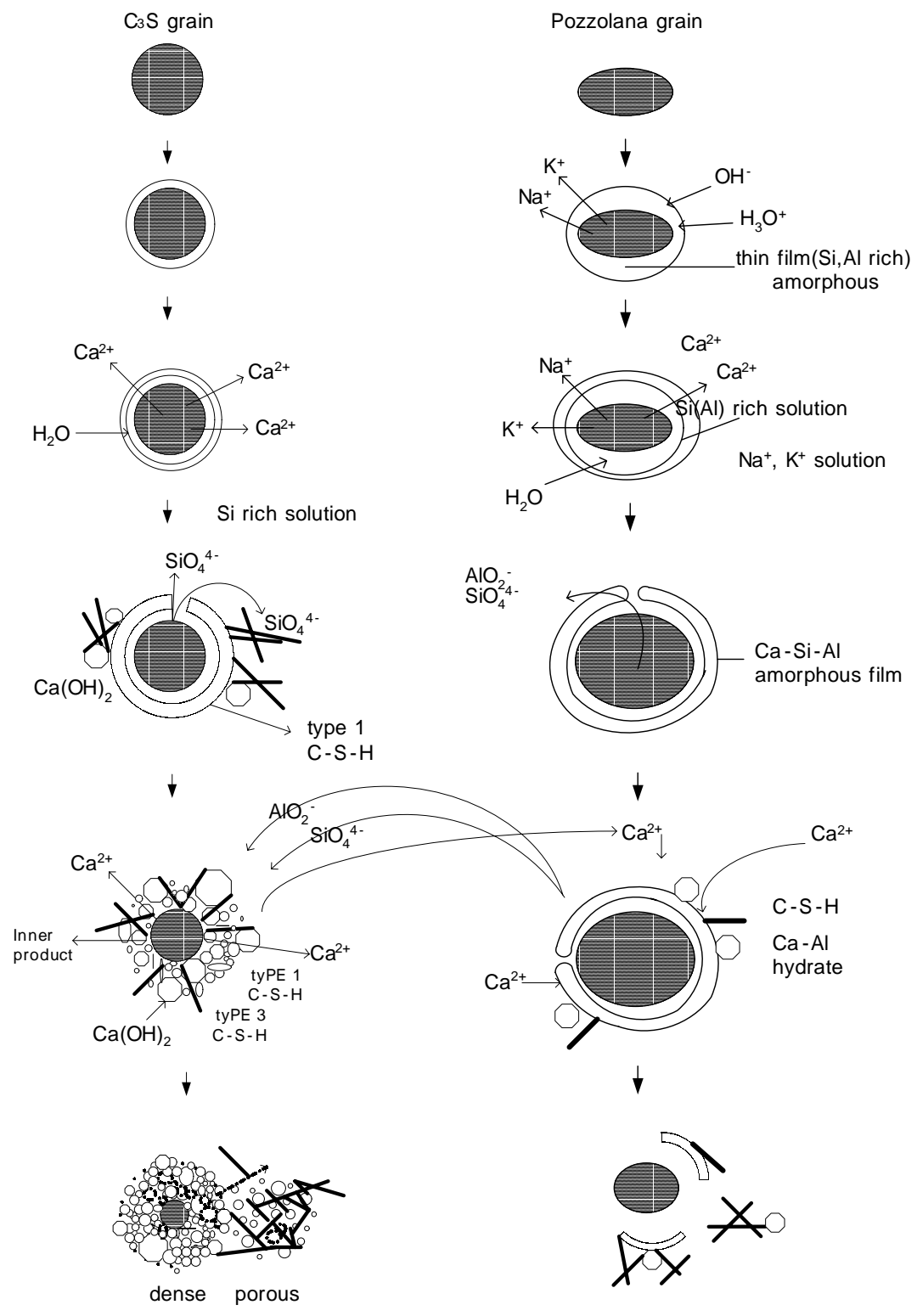
1. (Pozzolanic reaction)

Al_2O_3 가
 $Ca(OH)_2$
gel)

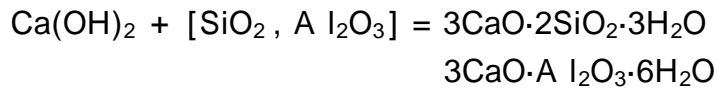
C_3S, C_2S

(C-A-H gel)

$SiO_2,$
(C-S-H



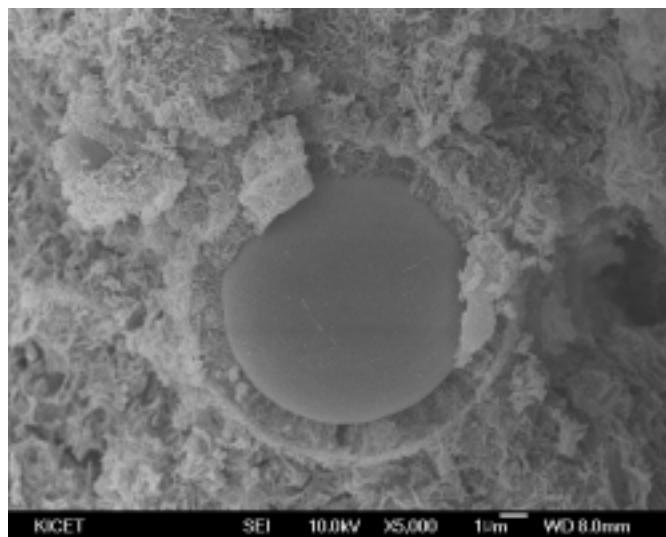
< -1 > C_3S



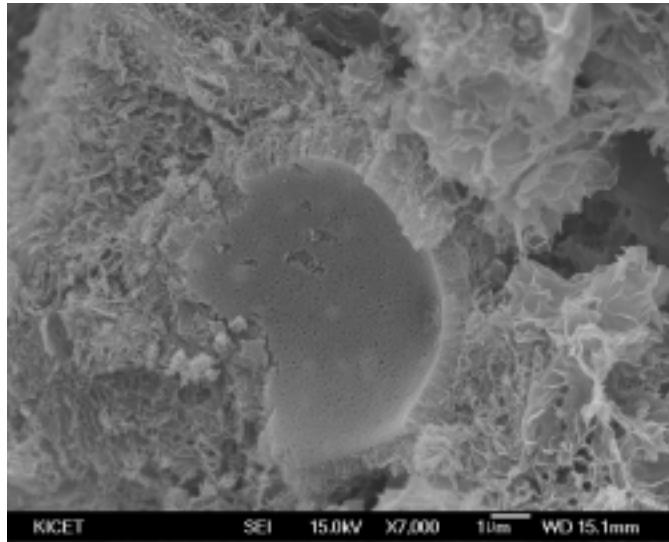
< -1> C₃S- C₃S

C₃S 가 C₃S Ca⁺, Ca⁺
 [(OH)⁻] C₃S Ca(OH)₂
 C₃S , Na⁺, K⁺

H⁺ H₃O⁺
 가 , Si, Al rich
 SiO₄⁴⁻, AlO₂⁻
 C₃S Ca²⁺
 C-S-H layer C-S-H II
 C-S-H
 C-S-H layer < -2>
 SiO₄⁴⁻, AlO₂⁻ C₃S C-S-H layer가 C-S-
 H Ca(OH)₂

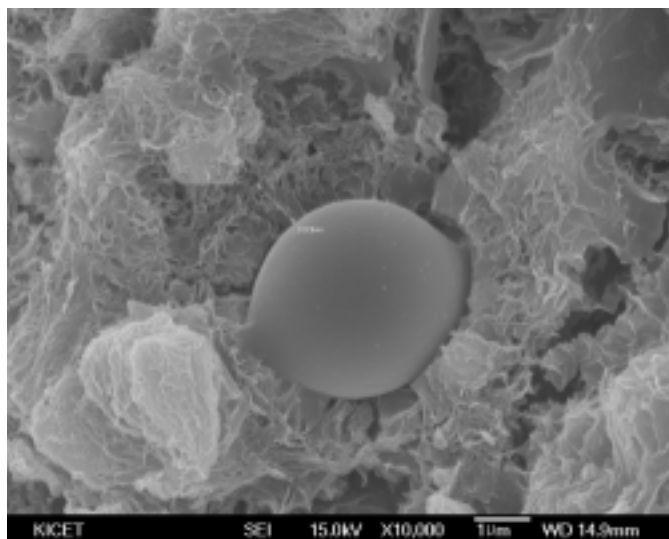


< -2> C-S-H layer.



< -3> SEM

< -3> 가 SEM
 가 layer가 layer
 < -4> 가



< -4>

2.

가. (Fly ash)

1400

가

15~40%

가

가

(ball bearing)

C₃S, C₂S

가

SiO₂

Ca(OH)₂

C-S-H gel

28

6

가

(Silica fume)

가

가

2,000

SiO 가

SiO₂

30%

2.2

1 μm

0.1 μm

200,000cm²/g

2 , 50
 250~300kg/m³ , 90% SiO₂
 , 가 , 가

(Rice husk ash)
 1 200kg 가 40kg
 가 가

(50~60m²/g)

가 , /
 / 2~3% 가
 가 가
 가 , 10% 가 -
 가 가

(1) (, Volcanic glasses)

가
 가

(2)

600~900

가

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,
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(3)

가 , ,

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