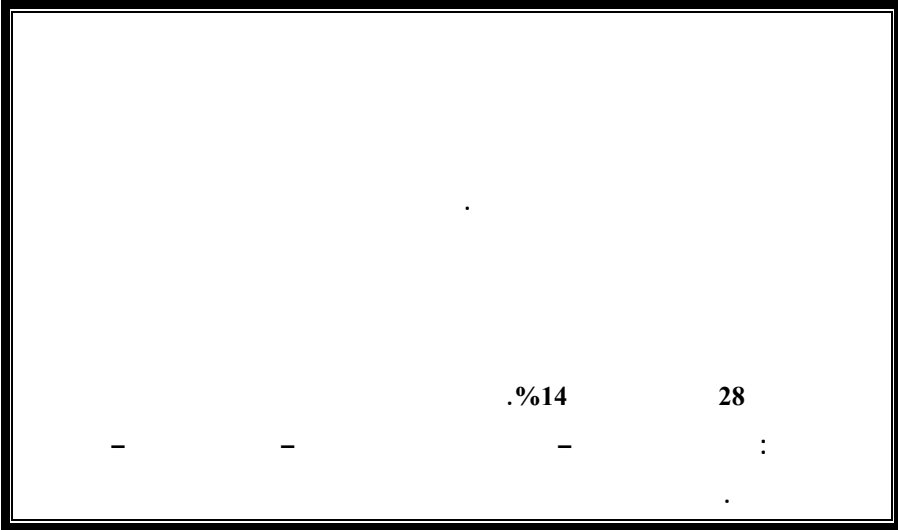


1

2



1

2

(accelerators)

(setting time)

(retarders)

(Compressive Strength)

.(9-1)

Hydration)

.(Reaction

.(10)

.(11)

C-S-H (I)

Induction)

C-S-H (II)

.(12,13)

(Period

(I)

.(14) C-S-H (II)

C-S-H

.(Seeding)

.(Delayed addition)

sucrose

(Control –)

[15] 2005

gluconate

sucrose

Super)

(Plasticizers)

.[16]

(retarders)

(Plasticizers

1%

(Triethanolamine)

2%

)

20

(20)

(

Initial)

(10–15)

(hydration

(Induction period)

..

(3, 7, 28)

:

Type (I) -١

:

Cl^-	Fe_2O_3	Al_2O_3	MgO	CaO	SO_3^{2-}	SiO_2	الفاقد بالحرق
أقل من 0.001	3.33%	5.37%	2.19%	62.66%	2.87%	20.50%	1.90%

(1)

-٢

(m - 1.18 mm^μ 150)

.No. (100)

No. (16)

28

-٣

24

-٤

C - S - H

-٥

Sucrose -٦

-٧

()

5×5×5 cm

-٨

.ASTM-C109 (Control)

———— = 2.75

———— = 0.485

: (2)

	Sucrose			C - S - H
	-	-	-	-
	-	1%	-	-
	0.15%	1%	-	-
	-	-	-	2%
	0.15%	2%	-	-
	0.15%	-	2%	-
	0.15%	-	-	2%
	0.15%	-	-	-
	0.15%	5%	-	-

(2)

100%)

(21±1C°

28 7 3

21±1C°

(+)
:(3) ()

	(g)	(g)		
	225	110	0.15%	-
	225	110	0.15%	2% C-S-H
	225	110	0.15%	2%
	225	110	-	2%
	225	110	-	-

(3)

:

(3) 9 - ==

) (4)

.(

	(N/mm ²)	(N/mm ²)	(N/mm ²)
၁	19.28	28.65	36.77
၂	22.95	28.95	36.48
၃	16.03	26.61	41.84
၄	23.25	28.08	34.57
၅	20.21	30.34	40.02
၆	19.88	31.44	38.88
၇	22.69	30.31	34.36
၈	15.62	30.37	37.72
၉	17.49	29.72	35.08

(၆)

:

- 1% -၁

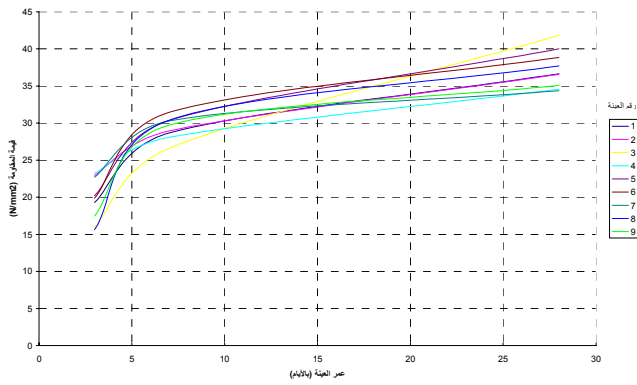
(၇)

C - S - H

(၇၈) (၇)

2%

				(٤	٢)
						-٢
	(٢٨)	(٧)			(٣)	
					(٨))
)						-٣
	2%	1%	(
(٢٨)				(٧)	(٣)	
9%	(٣)		14%			
				٦%	(٥)	
						-٤
(٣)						
(٧)، في حين		18%	(٤)	20%		
				5%		-٥
				(1)	

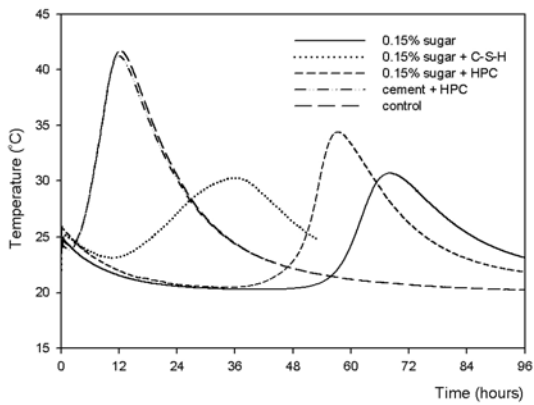


(1)

:

(3)

(٢)



(Y)

		:	(γ)	
	3			.1
00			1.	.2
	60			.3
	2%			
			ε.	.4
		()	
	2%	C - S - H		.5
55				
			:	-
)		(0.15%	55
- Protective Layer Theory			-	
C - S - H (I)				

C - S - H (II)

()

C - S - H ()

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