

* . .

(C&DW)Construction & Demolition Waste

Recycled Concrete Aggregate (RCA)

() *Control mix CM*
()

. Recycled Aggregate Concrete (RAC)

:

_____*

[5,6]

: -1

12.6

[1]

-2

[2]

[7]

(..

)

[8]

850

[8]2010

[9,10,11]

(*RAC*) *Recycled Aggregate*

Concrete

[3,12,13,14,15,16]

-2-1

[17]

[4,3]

[21]

.%30

:

-2-2

(.) [18]

% 18.6

()

% 11-5

:

-2-3

[19]

[22]

%100

%60

%100

:

-3

[20]

CM control mix

()

28

W/C

D_{max}

()

()

30,65,100%

NFA

:

-

(*RFCA*)*Recycled fine* ()
concrete Aggregate

(RFBA) Recycled fine brick Aggregate ()

NCA, NFA, RFCA, RFBA :

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[23]

:()

-3-1

(NCA, NFA) ()

(RCA)

(1 2)

NCA

1

()	1 1/2	1	3/4	1/2	3/8	N° 4	
%	100	100	95.1	71.1	24.9	1.5	
% ()	17.5						
	2.72						
%	0.49						

() NFA

2

()	3/8	N° 4	N° 8	N° 16	N° 30	N° 50	N° 100	N° 200
%	100	98.4	81.3	66.7	47.2	26.8	19.3	10.6
%	72							
	2.53							
%	1.21							

:RFA

-3-2

(RFCA)

4 3

(RFBA)

(RFCA)

3

()	3/8	N° 4	N° 8	N° 16	N° 30	N° 50	N° 100	N° 200
%	100	99.0	85.3	71.3	51.5	29.9	15.7	8.8
%	76							
	2.53							
%	7.52							

(RFBA)		4						
()	3/8	N° 4	N°8	N°16	N°30	N°50	N°100	N°200
%	100	100	88.9	69.9	52.3	31.2	22.5	14.4
%	69							
	2.38							
%	9.22							

:RAC

-3-3

: -1-3-3

42.5 - :C -

NA - $D_{max}=20$ W/C=0.55 250 Kg/cm²

() 12.5 ±1.0 cm

S () -

-

RFCA , RFBA ,

: 2-3-3

Eurocode2.ECU2

30 min :

() CM

10 *10*55 15*15*15) RAC_{c-30}

15*30 30% (

) RAC_{c-65}

65% (

12.5±1.0 cm RAC_{c-100}

100% ()

) RAC_{b-30}

30% (

5) RAC_{b-65}

Δ% 6 65% (

) RAC_{b-100}

: 100% (

5

	C Kg	Agg Kg	S Kg	W Kg	D_{max}	cm	30_{min} Cm
CM	380	980.4	692.2	210	20	12.6	12.4
RAC _{c-30}	380	980.4	484.6+207.6	210	20	12.3	12.1
RAC _{c-65}	380	980.4	242.2+450	210	20	11.9	11.6
RAC _{c-100}	380	980.4	0+692.2	210	20	11.2	11.0
RAC _{b-30}	380	980.4	484.6+207.6	210	20	12.0	11.8
RAC _{b-65}	380	980.4	242.2+450	210	20	11.4	11.0
RAC _{b-100}	380	980.4	0+692.2	210	20	10.8	8.5

6

	Kg/m ³					
		$\Delta\%$	7days	$\Delta\%$	28days	$\Delta\%$
CM	2608	0	2600	0	2612	0
RAC _{c-30}	2600	0.3	2595	0.2	2612	0
RAC _{c-65}	2579	1.1	2570	1.2	2590	0.8
RAC _{c-100}	2513	3.6	2502	3.8	2520	3.5
RAC _{b-30}	2588	0.8	2584	0.6	2600	0.4
RAC _{b-65}	2524	3.2	2504	3.7	2525	3.3
RAC _{b-100}	2437	6.6	2416	7.1	2468	5.5

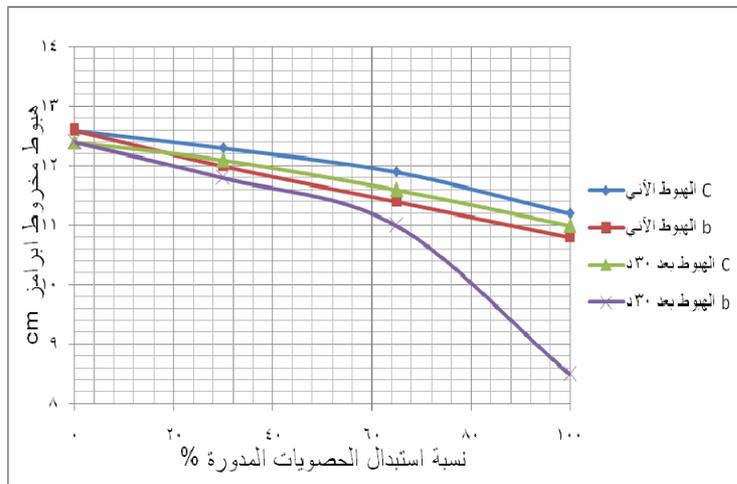
7

	MPa					
	7 Days	$\Delta\%$	28 days	$\Delta\%$	56 days	$\Delta\%$
CM	10.2		28.7		30.1	
RAC _{c-30}	9.9	2.9	26.9	6.3	29.5	1.99
RAC _{c-65}	8.6	15.7	24.1	14.3	28.9	3.99
RAC _{c-100}	7.8	23.5	22.2	22.6	28.1	6.6
RAC _{b-30}	9.8	3.9	25.7	10.5	28.0	6.98
RAC _{b-65}	7.9	22.6	24.6	17.8	25.4	15.6
RAC _{b-100}	6.2	39.2	18.3	36.3	20.1	33.2

8

	MPa	
	28 days	$\Delta\%$
CM	4.8	0
RAC _{c-30}	4.6	4
RAC _{c-65}	4.3	10
RAC _{c-100}	3.8	21
RAC _{b-30}	4.3	10
RAC _{b-65}	4.1	15
RAC _{b-100}	3.2	34

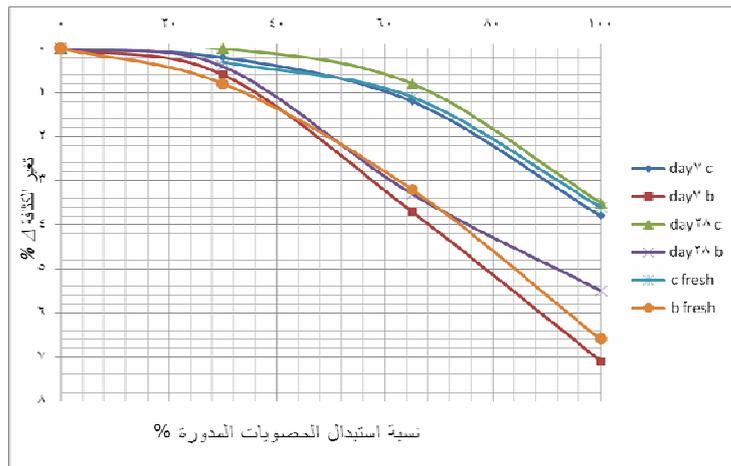
	MPa	
	28 days	$\Delta\%$
CM	3.3	0
RAC _{c-30}	3.1	6
RAC _{c-65}	3.0	9
RAC _{c-100}	2.8	15
RAC _{b-30}	2.9	12
RAC _{b-65}	2.7	18
RAC _{b-100}	2.5	24



30min

(1)

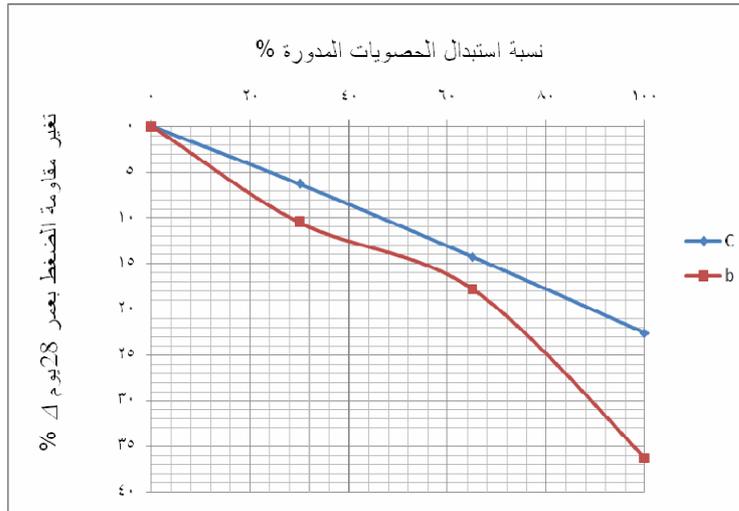
RFCA: , RFBA: bC



8 7

(2)

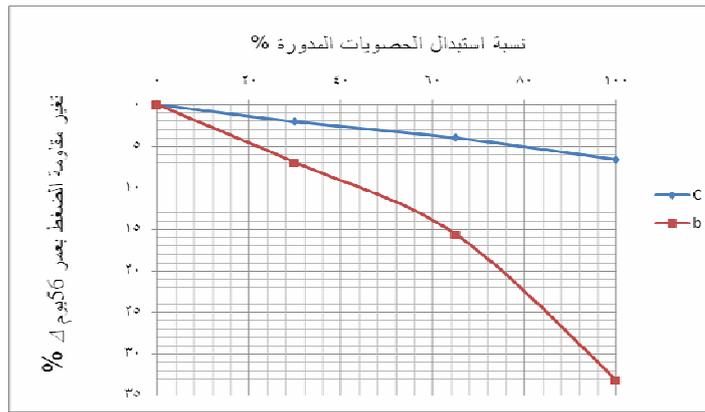
RFCA , RFBA : bC



28

(3)

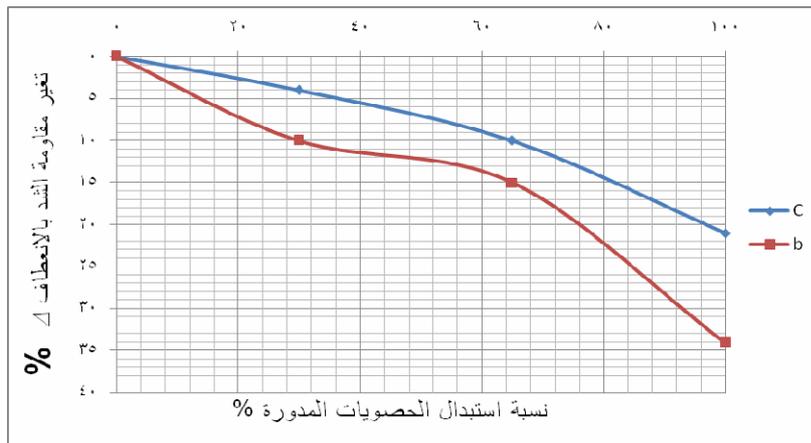
RFCA: , RFBA : bC



56

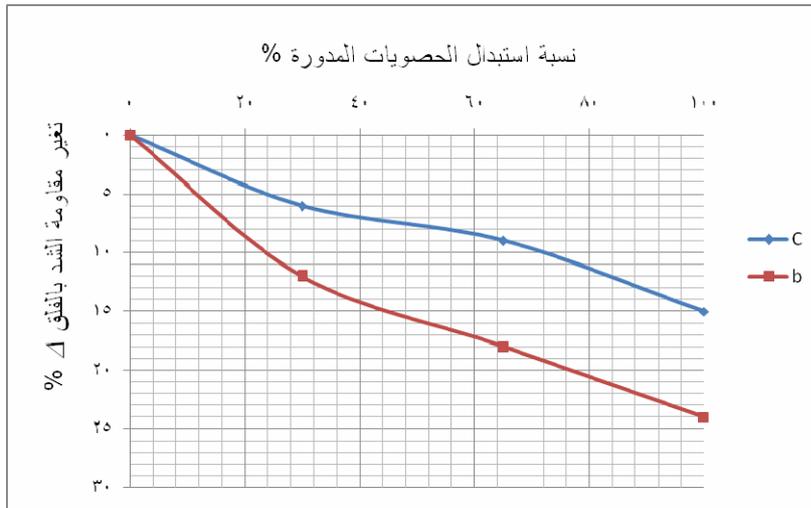
(4)

RFCA: , RFBA : bC



(5)

RFCA: , RFBA : bC



(6)

RFCA : , RFBA : bC

(

3) ()

(4

56 28

2

3 (3.6 7.7) %

(36.3 22.6)% 28

.65%

5

6 .(21 34)%

(24 ...15)%

100%

56 28

()

()

30

1

100%

)

:

-1

)

%100

(

-2

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-3

%65

%100

-4

.%65

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-1

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-2

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recycled from construction of demolition waste. Porto Alegre 2001:390].

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