

أستاذ مساعد
قسم هندسة السدود والموارد المائية كلية الهندسة-جامعة الأنبار

مدرس مساعد
قسم الهندسة المدنية كلية الهندسة-جامعة الأنبار

_____:

)

(

(% , % ,)

(%) SBR

)

(% ,)

(

(

Summary

This research includes study the effect of adding plastic chips resulting from cutting the plastic beverage bottles (which is used in Iraqi markets now) as fiber added to the polymer concrete and study there effects on some properties of polymer modified concrete like compressive strength and flexural strength. Two different percentage of fiber by volume equal to (1.6% and 3.25%) were used to made mixes. A reference mix was also made. SBR polymer was added as percentage of cement weight equal to (10%) to all concrete mixes.

Results proved that , improvement in mechanical properties with an increasing of fibers percentage by volume . An improvement in flexural strength (modulus of rupture) appeared more clearly . The maximum increasing in the value of 28-day modulus of rupture equal to (24.4%) for PMC mix with fiber percentage (3.25%), whereas the maximum increasing in compressive strength was equal to (4.1%) for the same mix. No clear different in density are notes.

_____:

(PC)

(PM)

()

() ()

(PPCC)

(latex)

Styrene Butadine Rubber Modified)

(Concrete

(SBR)

: ()Benture

.(Acrylic Styrene-butadine and Saran)

—

—

:

Styrene-butadine Acrylic

•

Saran

•

() Radonjanin Folic

Styrene Butadine Rubber

% = (:)

(:)

(%)

(^١)Schimizzee (^٢)Biel (^٣)Eldin

(high flexibility)

.(flexible pavement)

"stabilized base"

(ASTM Type I -)

.(^١) / . .

()

.(^١) (B.S. :)

.()

: ()

Sieve (mm)	PASSING%
,	
,	
,	

:() - - -

(B.S.- :)

() : ()

Sieve (mm)	Passing%

: - -

(GIC SBR)

: - -

:

-		
1.01	11 ± 0.2 @ 25 ⁰ c	
9.83	7-10.5	(pH)

() : - -

(×)

: - -

(× ×)

(× ×)

: - -

: ()

()	(SBR) ()	()	()	()	()	(%)	
,		,					P10F0
1.73		,				0.16	P10F.160
3.45		,				0.325	P10F.325

:- -

/

(,) .

()

:- -

:- -

:- - -

(ELE)

. () (B.S.1881, part (116): 1983)

.

:- - -

(ELE)

. () (ASTM (192-88))

.

:_____ - - -

.

:_____ -

:_____ - -

() () ()

(% - %)

%

.

. % ,

.

: ()

* (/)			
()	()	()	
,	,	,	P10F0
	,	,	P10F.160
	,	,	P10F.325

*

:(_____) - -

() () ()

(%)

%

%

()

. % ,

()

:-

()

() : ()

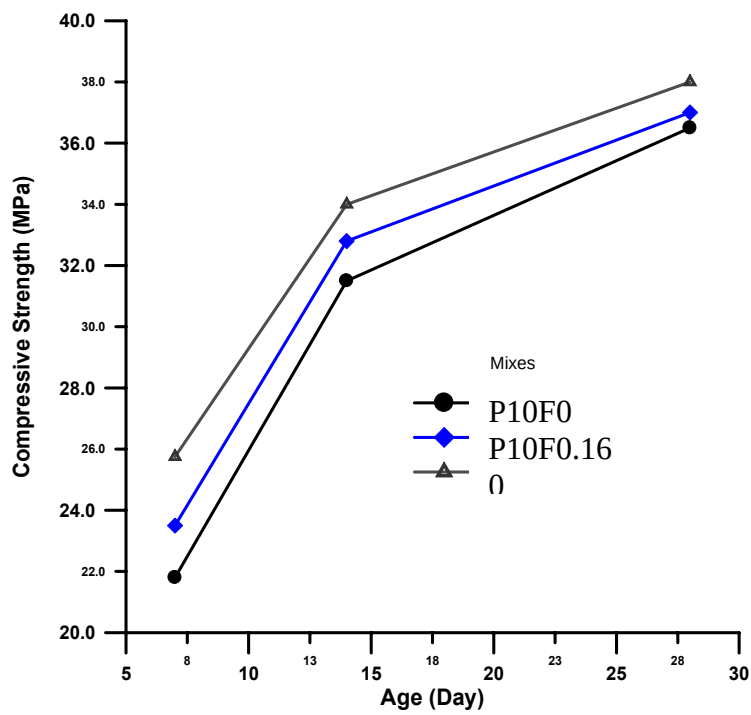
* (/) ()			
()	()	()	
,	,	,	P10F0
,	,	,	P10F.160
,	,	,	P10F.325

*

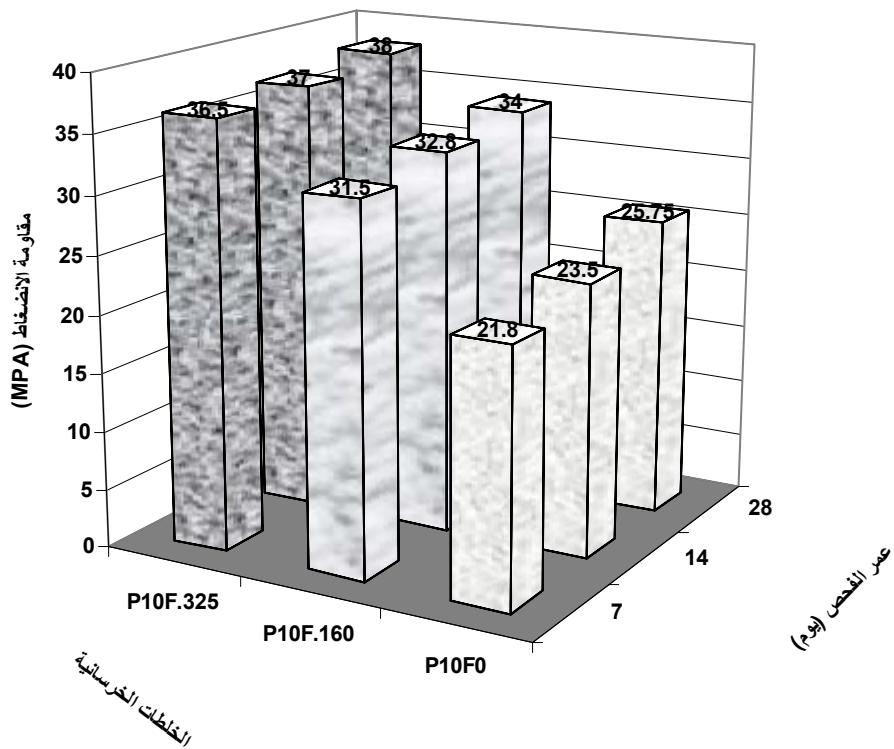
: ()

* (/)			
()	()	()	
2360	2260	2214	P10F0
2367	2295	2268	P10F.160
2400	2300	2283	P10F.325

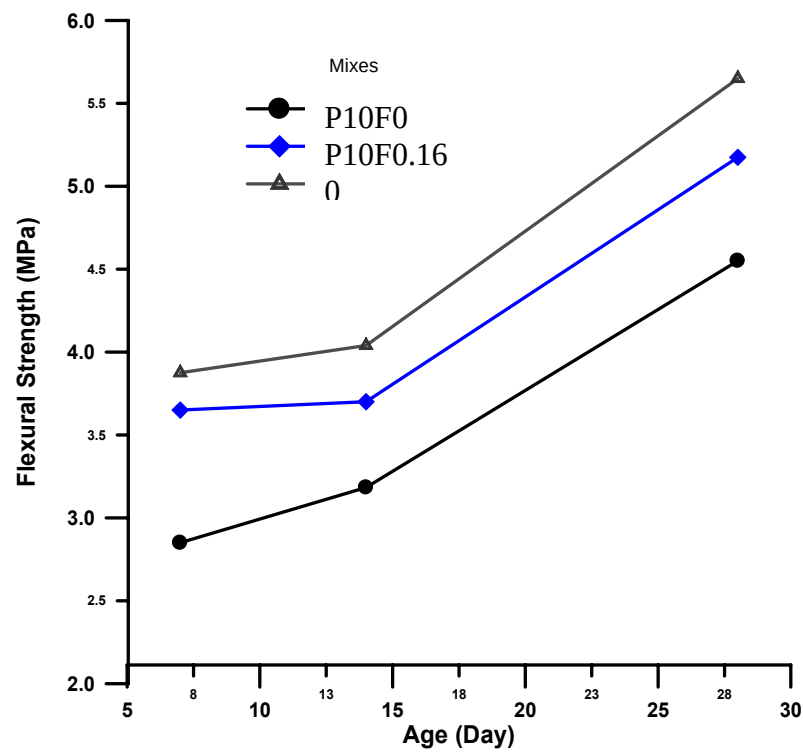
*



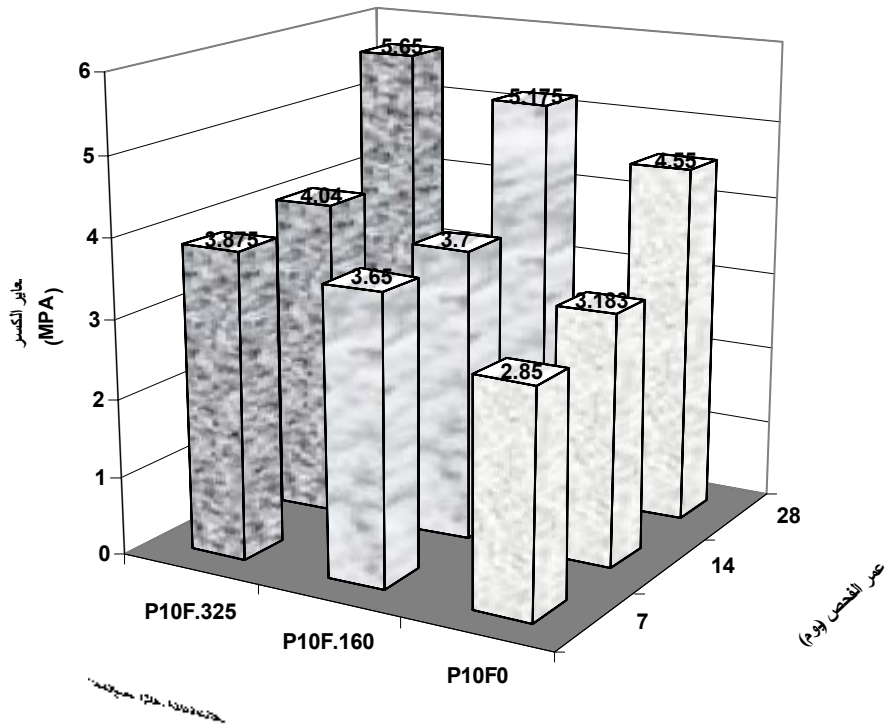
:()



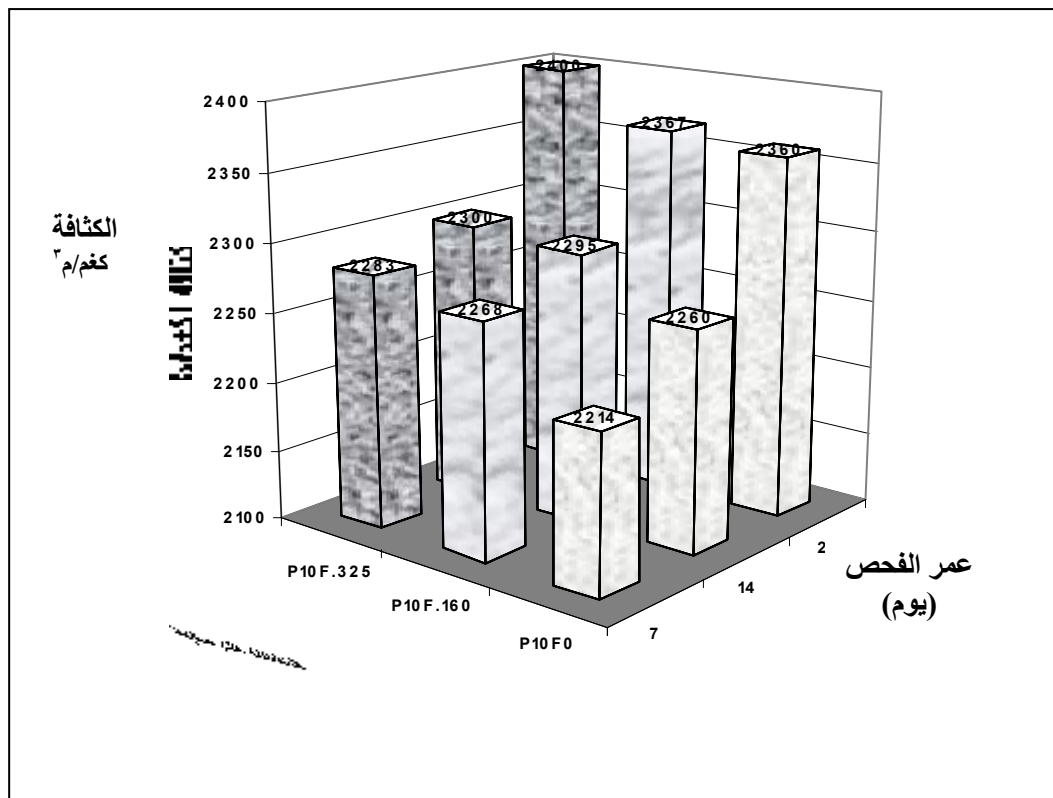
:()



() :



() :



() :

_____ :

:

٥-المصادر:

1. Nagaral , T. S. ; Iyengar,S.R.;and Viswanatha,C.S.,” PC and Polymer-Fibrous Concrete”. Int. Symposium, SP-58, ACI, Detriot, 1978,pp.139-160.
2. Fu,X.L. ; Lu,W.M. ;and Chung,DDL,”Improving the bond strength between carbon fiber and cement by fiber surface treatment and Polymer Addition To Cement Mix “.Cement and concrete research.26(7),1996 July, pp.1007-1012.
3. -Benture, A.,“Properties of polymer latex-cement composites”. The International J. of Cement Composites and Lightweight Concrete”. 4(1)February ,1982,pp.57-65.

4. Folic, R.J. and Randonjanin, V.S. "Experimental Research on Polymer Modified Concrete". ACI Material J., May-June, 1999, pp. 463-469.
5. Ohama, Y. "Polymer-based Admixtures". Cement and Concrete Composites J. 1998, 20, pp. 189-212.
6. Eldin, N. N., and Senouci, A. B. (1993), "Rubber – tire particles as concrete aggregate." J. Mat. In Civ. Engrg., ASCE, 5(4), pp. 478 – 496.
7. Biel, T., D., and Lee, H., (1994). "Use of recycle tire rubbers in concrete." Proc., ASCE 3rd Mat., Engr. Conf., Infrastructure: New Mat. And Methods of Repair, pp. 351 – 358.
8. Schimizza, R., Nelson, J., Amirkhanian, S., and Murden, J. (1994). "Use of waste rubber in light – duty concrete pavements." Proc., ASCE 3RD Mat. Engr. Conf., Infrastructure: New Mat. and Methods of Repair, pp. 367 – 374.
9. " /
10. British Standard Institution. B. S. 1981, Part (5).
11. B.S. 882-1992; "Specification for Aggregate from Natural Sources for Concrete", British Standards Institution, 8pp.
12. British Standards Institution, B.S. 1881. Part 116:1983, "Method for Determination of Compressive Strength of Concrete Cubes".
13. ASTM committee, C 78-84, "Standard test method for Flexural Strength of Concrete " 1988.