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Modification of Rheological Properties of Asphalt by Treatment with Reclalaime Rubber from Scrap Tires\Effect Modification Treatment on the Properties of the Modified Asphalt

Niem M. Al-Layla
Department of Chemistry
College of Science
Mosul University

ABSTRACT

Reclaimed rubber of scrap tires is added to modify the physical characteristics of asphalt in two manners. The first one depends on combining the rubber molecule with some of the asphalt. The second one depends on the same principle in addition to adding sulphur to formulate sulpharized compounds. The out come of these asphalt patterns and their physical characteristics are specified. The results of this study indicate that these modified asphalt patterns are characterized by having little thermal sensitivity in comparison with unmodified normal asphalt.

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(1960)

.(EPPS, 1994) (McDonald)

(Rubber-Modified Asphalt)

.(Rubber manufacturers association, 2002) (Asphalt-Rubber)

(Wet (Donald Process) Process)

(2-1) °(220-175)

(Plus Ride (Dry Process) (Asphalt–Rubber) Process)

(Prithvi,1992; Navarro et al., 2004)

(Filler)

.(Zanzotto and Kennepoh, 1996)

(Bahia et al., 2001)

(Brain and Mohammed, 1997)

.(Brian and Mohammed, 1997)

– (AL-Dobouni et al.) 2003

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.(AL-Dobouni et al., 2003)

: -
 : -1
 .+100 55 °(47) ³ / (1.02)
 : -2

.%1
 : -3
 .%99 Fluka
 : -4

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 .(AL-Layla, 1999)

: -

:
 : -1

(%3,%1.5)

(1)

. °160

: -2

(%3,2,1,0.5)

.....

(1) (2)

(3) (° 200 , 180, 160)

: -

(ASTM, 1986)

(ASTM, 1972)

(1)

:1

3% AlCl ₃						1.5% AlCl ₃					
P.I		100 °25 5	°	%		P.I		100 °25 5	°	%	
-1.76	100	55	47	0	1	-1.76	100	55	47	0	1
+0.23	20	30	62	5	6	-0.38	25.5	35	57	5	2
+0.55	15	25	66	10	7	+0.29	20	30	59	10	3
+0.94	9	20	71	15	8	+0.5	16	29	64	15	4
+1.19	6	18	74	20	9	+0.9	9	25	68	20	5

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. °160 :

:

(1)

(2)

:2

3% AlCl ₃							1.5% AlCl ₃						
P.I		100	°	%	%		P.I		100	°	%	%	
		25 5							25 5				
-1.76	1.00	55	47	0	0	1	-1.76	100	55	47	0	0	1
+5.04	1.5	20.6	105	0.5	10	14	+3.66	3.4	25	88	0.5	10	10
+5.21	1.0	15.5	113	1	10	15	+3.83	4	23	91	1	10	11
+5.3	1.4	18	111	2	10	16	+3.59	3.7	21	90.5	2	10	12
+5.04	2	19	107	3	10	17	+3.81	3.7	24	90	3	10	13

:
°160 :
:

() (2)
(1)

%1
.(%3,%2)

.(1)

(2)

(AL-Dobouni et al.,

1994)

.(Gel Asphalt) (Sol Asphalt)

(Brittle)

(1-4)

(PI) (Penetration Index)

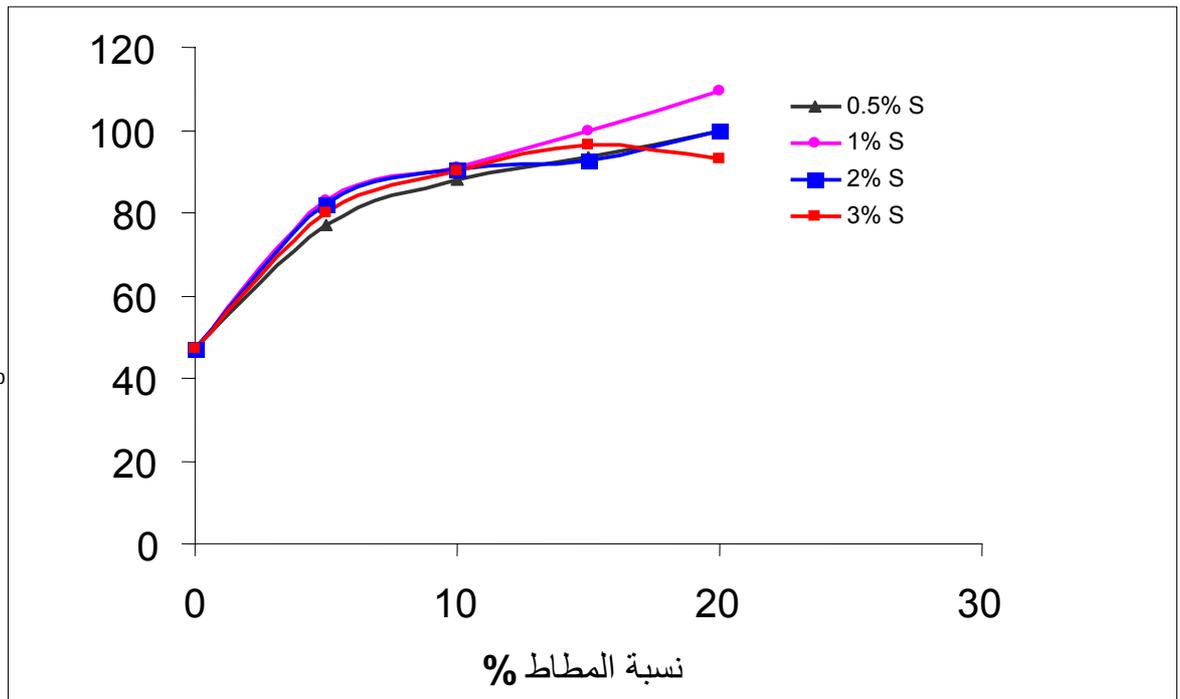
(2+) (PI)

(Gel Asphalt) (Sol Asphalt)

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(Traxler, 1961; Kirk, 1963)

(°60)

(2) (1)



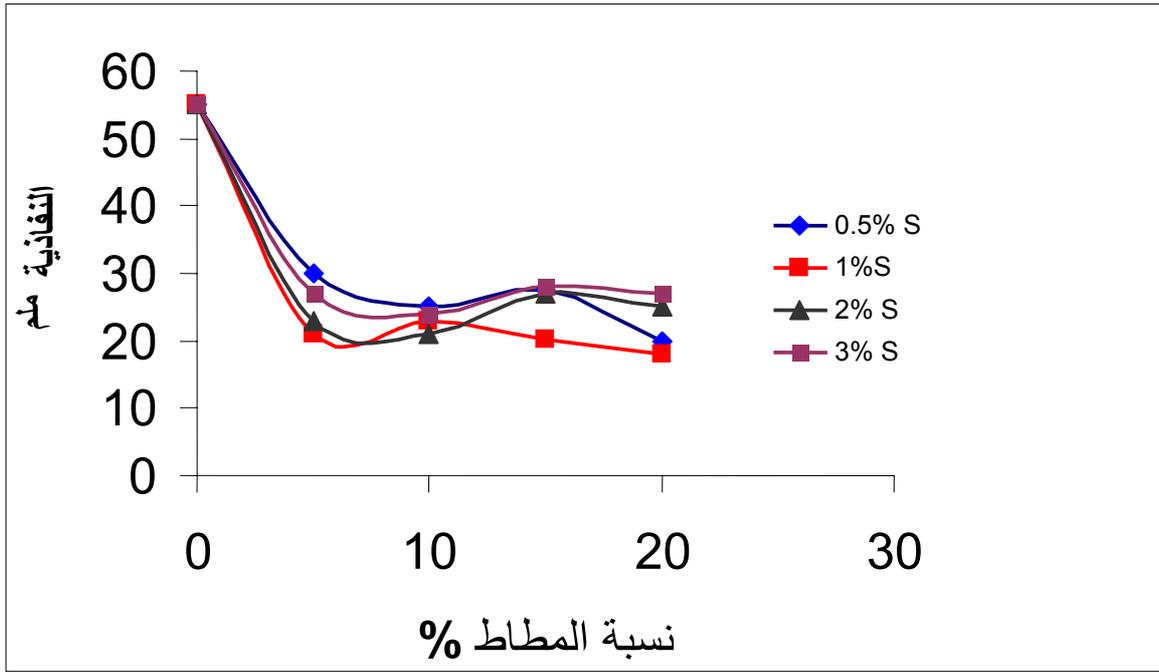
:1

°200-160
°154

5

(3)

°123



:2

:3

P.I		100 °25 5	°	%	°	
+5.7	2	13	123	20	160	18
+5.9	Brittle	8	133	20	180	19
+6.2	Brittle	5	154	20	200	20

:

:

%3 :

.2003

.3179

.1999 ,

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