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Using Combi-layer to Limit Permanent Deformation in Road Pavements

A. khodaii; A. kavusi; Z.mirazizi

ABSTRACT

Porous bituminous mixes that are saturated in cement slurries are named “combi-layer”. These types of mixes consist of coarse aggregates and contains little fines and have a high air voids content (of up to 20%). The porous property of combi-layer makes these mixes to be flexible while the saturated cement slurry improves their resistance to deformation and rutting. This research mechanical properties of one type of porous mix saturated with cement slurry at different cement concentration were investigated. Marshall, Creep and Indirect Tensile Tests were conducted on dry and saturated samples. The ITS tests were performed at (-10 , zero , 40°C). The results showed that samples saturated at 32% cement had both high strength and appropriate flexibility . Hence with this type of mixes it would be possible to have the benefits of porous mixes (i.e. drainages, skid resistance ...) while these mixes have enough strength to resist deformation.

KEYWORDS

Porous Asphalt, Indirect tensile strength, deformation.

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// :

khodaii@aut.ac.ir :

i

kavussi@Yahoo.co.uk :

ii

mirazizii@gmail.com :

iii

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(%)

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Salviacim

(Rone 1976, []

Anderton 2000)

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AASHTO

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AASHTO-T ₄₉	/	°c
AASHTO-T ₅₃	°C	
AASHTO-T ₅₁	cm	°c
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ASTM-

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ITS

ASTM D 1559

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BS: 598-PART3

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Creep compliance Creep modulus (MPa)

(1/Mpa)

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(Flow time)

°C

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UTM

(Psi)

Kpa

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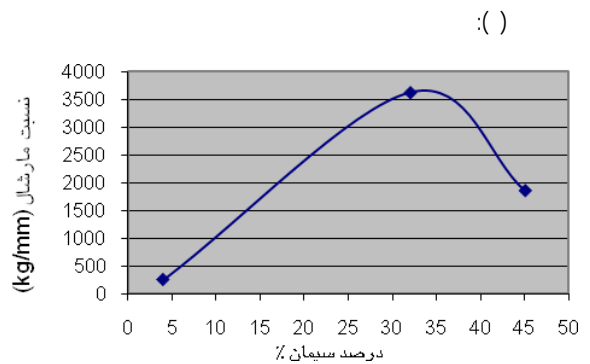
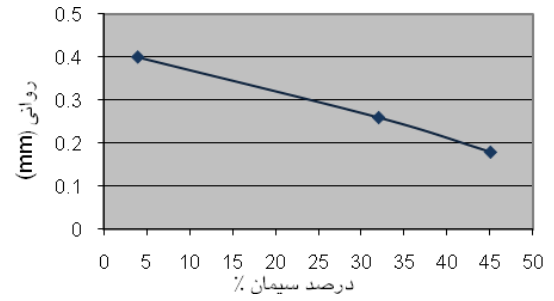
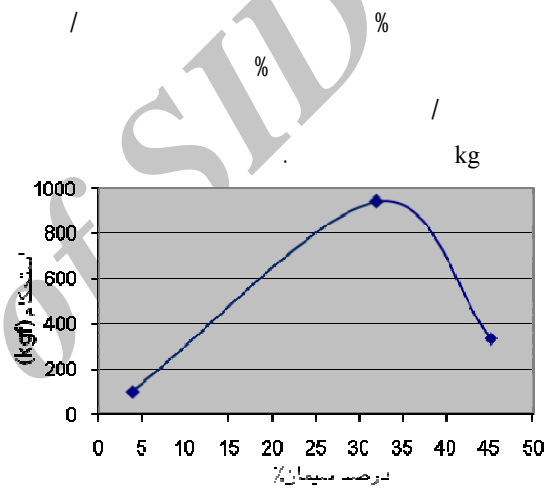
/ kg/mm

°C		UTM		:()
%	%	%	%	
/	/	/	/	Creep modules (MPa)
/	/	/	/	Flaw time (s)
/	/	/	/	Creep compliance (1/Mpa)

()
/ Mpa

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/ (1/Mpa)

(compliance)

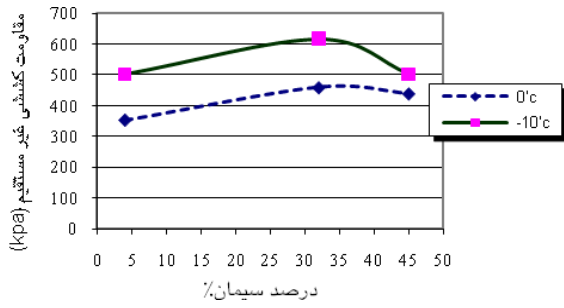
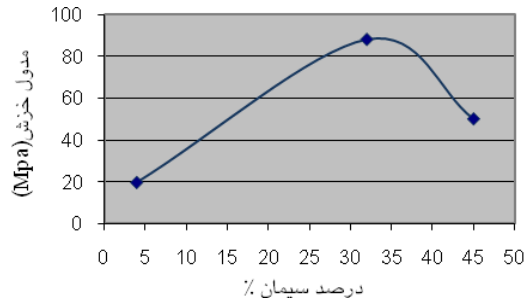


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UTM : ()

-10°C

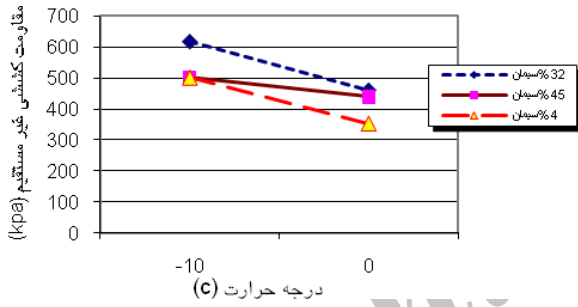
%	%	%	
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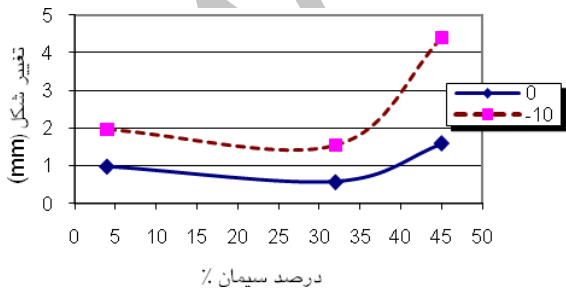
() ()
%
/ kpa
(/ kpa

ITS : ()



(/ mm)

ITS : ()



: ()

UTM : ()

°C

%	%	%	
/	/	/	(KN)
/	/	/	(kpa)
/	/	/	(mm)



/ / / /

ITS

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