

P2GTR

P.R.I.M.E. Permutated Ground Tire Rubber

Introduction: Over the last year the PrimePlex laboratory has focused its research and development on completing fourteen years of work dedicated to processing scrap rubber tires into highly useful polymers. The goal is to use the PRIME (phase reactor integrated molecular electromagnetics) P2GTR polymer and its variations to provide high performing, cost-effective alternatives to existing worldwide polymer applications including asphalt modification, waterproofing, and tire production.

Oil refining processes are ever more efficient, and downturns in asphalts inherent capabilities will continue to diminish the road industries capacity for providing long lasting roads. As polymer modification becomes more widely used and understood through specifications like Performance Graded (PG) asphalts the need will increase for creative materials to help HMA remain the standard for highway surface construction.

Recent tests have been conducted to qualify the current abilities of the P2GTR polymer as it applies to HMA modified binders. A hybridized version of this material at a 4% loading into an AC-30 base has proven to satisfy the requirements of the PG 76-22 standard. Wear properties measured through the Georgia Wheel Test (rutting resistance) also showed that the P2GTR had roughly half the rutting as compared to equal, cost equivalent loadings, of SBS rubber. Furthermore, the low temperature flexibility results indicated that the P2GTR was imparting characteristics only achieved by augmented loadings of an SBR modifier. Conclusive test data on emulsions derived from these modified binder are expected over the next few months.

As we are in the infant stages of determining the limits to this technology we are working to deliver premiere materials during the 2006 calendar year with a target to initiate production in all U.S. regions during 2007. Please direct inquiries to contact information listed on the bottom of this publication.



Test Characteristic	Method/Designation	Results
<i>Original Binder</i>		
Spot Test	AASHTO T102	Negative
Solubility in TCE, %	AASHTO T44	97.8
Rotational Viscosity @ 135C		1.387
Pa.s. 3.0 max. @ 165C		0.35
DSR, kPa @ 76C (1.0 kPa min.)	G*/sin delta	1.68
	Phase Angle	76.5
<i>RTFO Residue</i>		
Mass Loss, 0.5% max.		0.09
DSR, kPa @ 76C (2.2 kPa min.)	G*/sin delta	3.97
<i>PAV Residue</i>		
DSR, kPa max. @ 25C	G*/sin delta	5144.0
BBR @ -12C (m- 0.30 min.)	m Value	0.305
(s- 300 max.)	Stiffness	214.0

