



## CERANOVUS<sup>®</sup> Polymer Additives Enhance the Performance of Polymer Modified Asphalt

**GREENMANTRA<sup>®</sup> combines TECHNOLOGY with SUSTAINABILITY to create unique CERANOVUS<sup>®</sup> A Series Polyethylene and Polypropylene Polymer Additives from recycled plastics.**

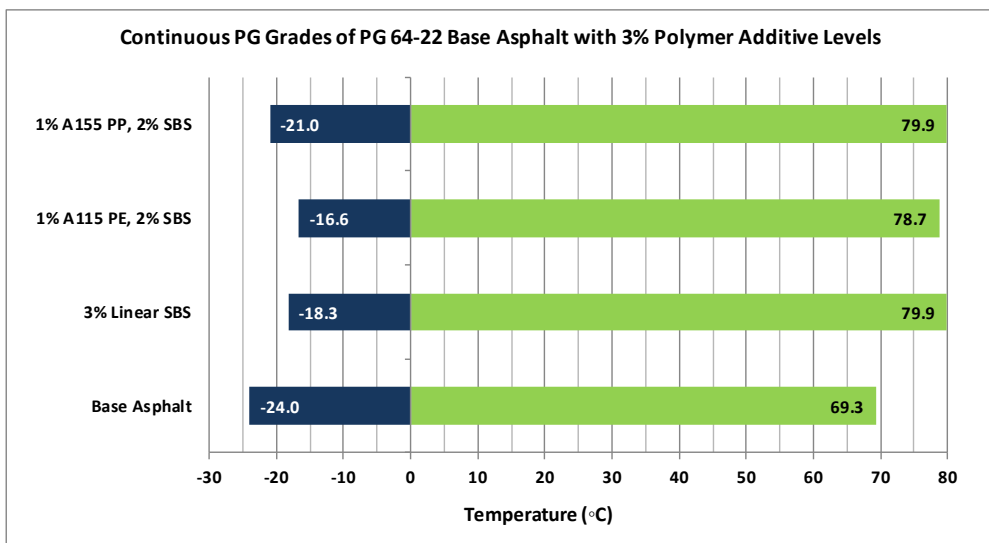
**CERANOVUS<sup>®</sup> A Series** polyethylene (PE) and polypropylene (PP) additives have low viscosity and penetration hardness but also exhibit asymmetrical polymer characteristics and greater polarity due to higher molecular weights and short chain branching. This unique combination of properties enables the **CERANOVUS<sup>®</sup>** additives to remain bound within the polymer modified asphalt matrix.

CERANOVUS <sup>®</sup> Additive	Product Type	Density (g/cm <sup>3</sup> ) ASTM D1298	Drop Point (°C) ASTM D3954	Penetration @ 25°C in dmm ASTM D1321	Viscosity cps @ 140°C BROOKFIELD	Viscosity cps @ 190°C BROOKFIELD
A115	Polyethylene	0.92	116	2	225	-
A155	Polypropylene	0.90	155	2	-	75

**CERANOVUS<sup>®</sup> A115 PE and A155 PP** were blended at 1% by weight into a polymer modified PG 64-22 asphalt containing 2% by weight linear SBS. These blends were then evaluated by the University of Massachusetts per AASHTO protocols.

Test results confirm that **CERANOVUS<sup>®</sup> PE and PP** additives enhance the performance of polymer modified asphalt by delivering the following benefits:

- Maintain high temperature performance grade bump
- 25+ % viscosity reduction for improved workability
- Sustain Extremely Heavy Traffic “E” Grade

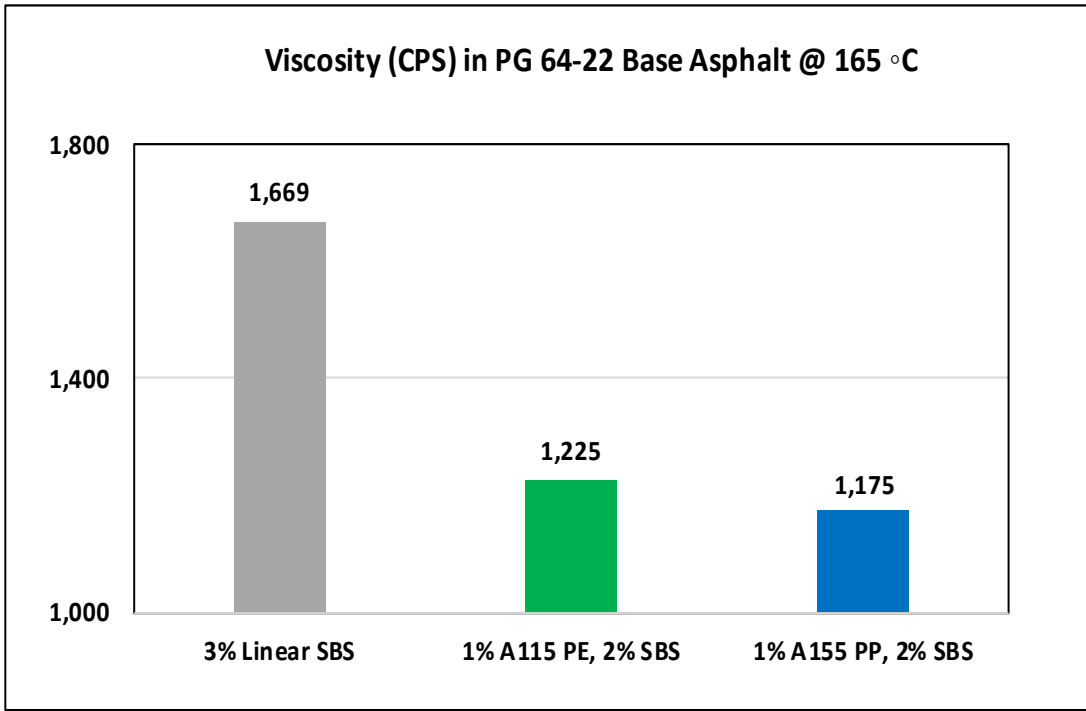


**Chart 1**

Continuous Performance Grade AASHTO M 320\*

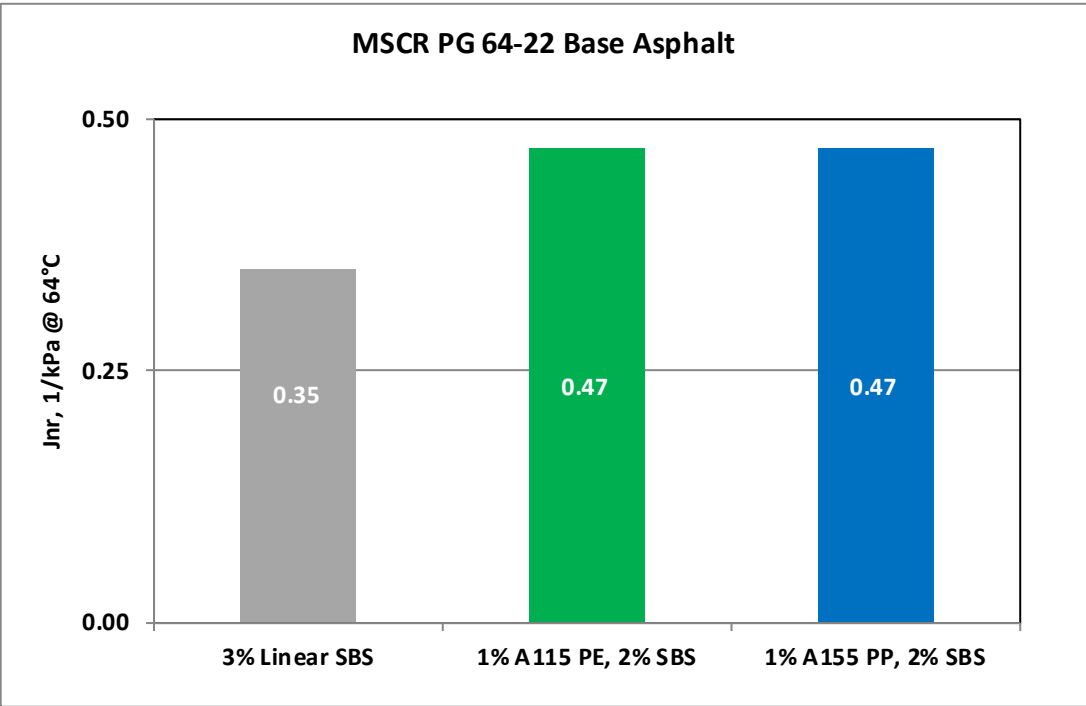
- Replacing 1% of the SBS with A115 PE or A155 PP additive maintains the high temperature grade bump.
- A155 PP additive also stabilizes and recovers a portion of the low temperature performance.

\*AASHTO M 320 includes T 313, T 315 and T 240



**Chart 2**  
Formulation Viscosity  
AASHTO T 316

- Both A115 PE and A155 PP additives dramatically reduce the viscosity of the polymer modified asphalt by 27% and 30%, respectively.
- This viscosity reduction improves the workability of the formulation while retaining both the performance grade bump and traffic grade of the polymer modified asphalt.



**Chart 3**  
Multiple Stress Creep Recovery  
AASHTO M 332

- Both A115 PE and A155 PP additives preserve the Jnr value below 0.50 when combined with SBS.
- Polymer modified blends with 1% A115 PE or A155 PP additive maintain the “E” grade rating for Extremely Heavy Traffic.



MADE WITH 100% RECYCLED CONTENT  
PRE-CONSUMER AND POST-CONSUMER  
**CERANOVUS® A Series**  
polymer additives are made from  
100% post consumer and post  
industrial recycled plastics as  
certified by SCS Global Services



**GREENMANTRA®**  
TECHNOLOGIES

81 Elgin Street | Brantford, ON N3S 5A1 | Canada  
info@greenmantra.com | 888-519-2015

© 2018 GreenMantra Technologies Ltd. All rights reserved



Products containing  
**CERANOVUS® A Series**  
polymer additives contribute  
towards LEED certification  
and credits programs.