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MTE RESEARCH REPORT--CONFIDENTIAL
RESULTS OF TESTING CRUMB RUBBER PLUS VESTENAMER MIXES
COMPARED TO PG 64-22 CONTROL MIX FOR APAC TRIAL

BACKGROUND

MTE received three bags of plant mix from Rubber Asphalt Solutions to conduct tests to ascertain whether or not the presence of the crumb rubber additive could be verified. This is a follow-up investigation to an earlier investigation wherein we had determined that a complex modulus test conducted on mix slices would be an effective tool to confirm the presence of the additive. Essentially this particular set of tests is a verification of our earlier effort using a real world plant trial. Mixes consisted of a PG 64-22 mix with no additive, mix containing a 10% addition of crumb rubber plus Vestenamer and mix containing a 15% addition of crumb rubber plus Vestenamer. For all mixes we determined the maximum specific gravity of the mixes and then compacted the mixes to a target air voids level of 4%. The air voids achieved were 3.8% for the 64-22, 3.8% for the 10% blend and 3.7% for the 15% blend. A temperature frequency sweep was conducted using a dynamic shear rheometer over the temperature range of 52°C to 76°C using frequencies ranging from 0.1 to 100 radians/sec.

RESULTS

The results are shown in the two accompanying data plots Figures 1 and 2. Figure 1 is a comparison of frequency sweeps for the three mixes at 70°C and Figure 2 is a comparison of temperature sweeps for the three mixes at a frequency of 10 Hertz. Both figures provide the same answer as to the relative properties of the mixes. There is a significant improvement in modulus between the 10% rubber added mixture and the PG 64-22 control. However, the 15% rubber added mixture, while showing substantial improvement over the control, showed slightly lower modulus results compared to the 10% blend. This lower value is not significant and therefore my conclusion is that the 10% and 15% blends perform at the same level.

Table 1
 Complex Modulus Results at 70°C and 10 Hz

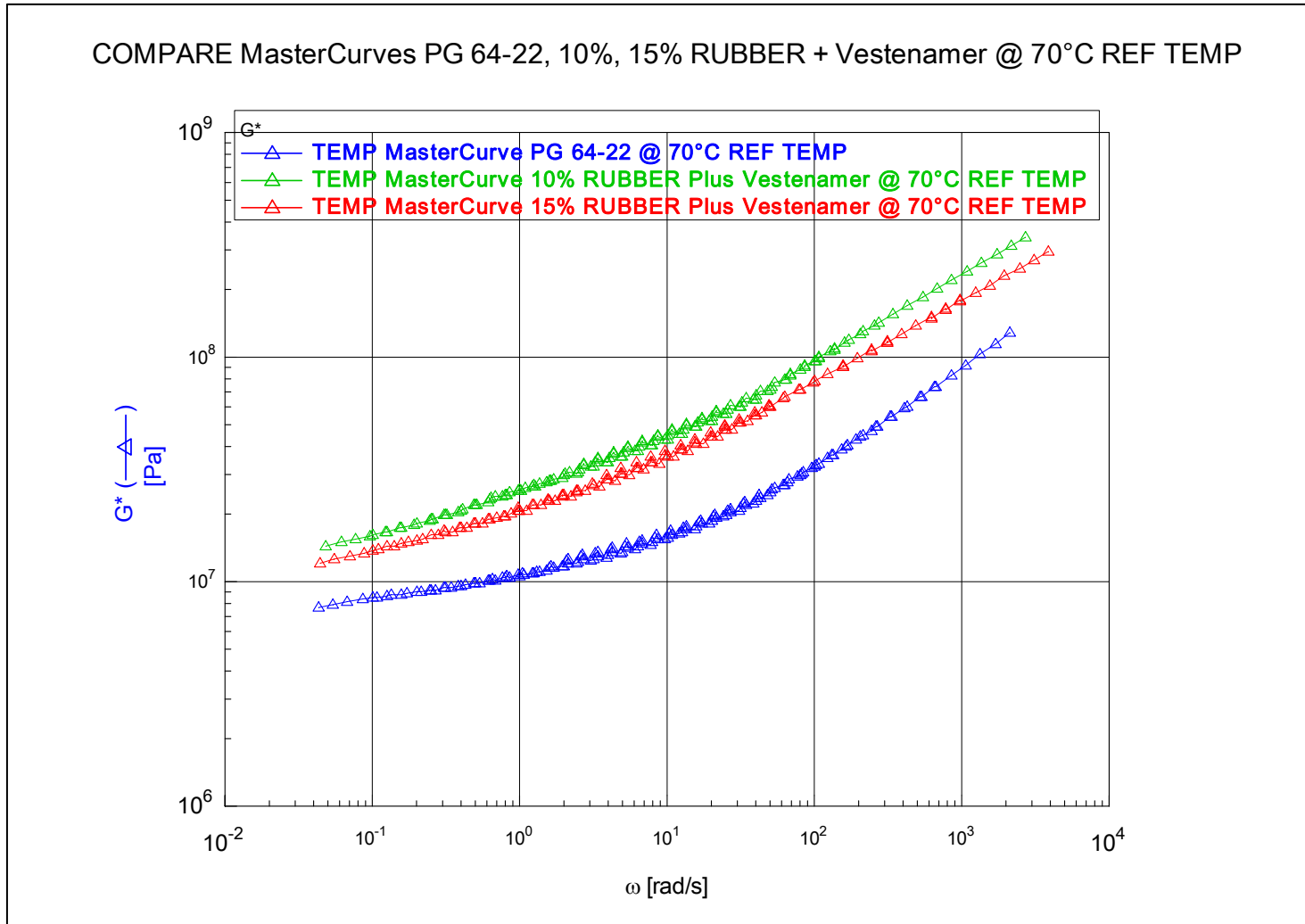
PG 64-22	10% Rubber Vestenamer Blend	15% Rubber Vestenamer Blend
33.8 MPa	72.3 MPa	68.1 MPa

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As can be seen from the plots, these trends are consistent over the range of the tests. I believe it is safe conclude that the DSR complex modulus test is able to discriminate between a control mix and a blend of 10% rubber and Vestenamer

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FIGURE 1



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FIGURE 2

