



**DONGRE  
LABORATORY  
SERVICES**

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An AASHTO Accredited Laboratory

Consulting and Testing Services in Asphalt Technology

REPORT ON SAMPLE(S) OF PERFORMANCE GRADED BINDER		DLSI
DLSI Internal ID		
Material Supplier	<b>Jim Stepp</b>	
Supplier ID		<b>A</b>
<b>PG Grade</b>		<b>PG 76-22</b>
<b>Continuous PG Grade</b>		<b>PG 81.76-22.77</b>
<b>Un-aged Binder Tests:</b>		
Viscosity-Rotational, cP 135 C	T316	1.660
Flash Point, C	T48	310
<b>Cigar Cubes Separation at 163C 48 hours</b>		
Softening Point, Top, F	T53	125.2
Softening Point, Bottom, F	T53	153.0
Difference	<18F between top and bot	-27.8
Dynamic Shear Rheometer	T315	
	Temp Pass	<b>76</b>
Phase Angle, degrees		82.1
G* @10 rad/sec, kPa		1.92
G*/sin delta @10 rad/sec, kPa		1.94
	Temp Fail	<b>82</b>
Phase Angle, degrees		84.9
G* @10 rad/sec, kPa		0.98
G*/sin delta @10 rad/sec, kPa		0.98
Pass/Fail Temp		<b>81.8</b>
<b>RTFO Residue Tests:</b>		
Mass Loss, %	T 240	-0.195
Dynamic Shear Rheometer	T 315	
	Temp Pass	<b>82</b>
Phase Angle, degrees		73.1
G* @10 rad/sec, kPa		2.63
G*/sin delta @10 rad/sec, kPa		2.75
	Temp Fail	<b>88</b>
Phase Angle, degrees		76.5
G* @10 rad/sec, kPa		1.44
G*/sin delta @10 rad/sec, kPa		1.48
Pass/Fail Temp		<b>84.2</b>
<b>Multiple Stress Creep Recovery AASHTO TP 70</b>		<b>67</b>
Jnr, 3.2 kPa average	max Jnr at 3.2 kPa = 1.0	<b>0.40</b>
%R3.2 > (29.37(Jnr,3.2)^-0.2632)	37	<b>29</b>
<b>PAV Residue Tests:</b>		
Dynamic Shear Rheometer	T 315	
	Temp	<b>31</b>
Phase Angle, degrees		42.6
G* @10 rad/sec, kPa		3270
G*/sin delta @ 10 rad/sec, kPa		2210
Direct Tension Test	T 314	
	Temp Pass	<b>-12</b>
Strain, 1.0 mm/min		1.45
Stress, Mpa		2.402
Bending Beam Rheometer	T 313	
	Temp Pass	<b>-12</b>
s, 60s, Mpa		175
M-value, 60s		0.305
	Temp Fail	<b>-18</b>
s, 60s, Mpa		293
M-value, 60s		0.266
Notes:		