



**Dongre Laboratory Services Inc.**  
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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>B</b>
PG Grade		<b>PG 76-22</b>
Continuous PG Grade		<b>PG 81.25-23.71</b>
<b>Un-aged Binder Tests:</b>		
Viscosity-Rotational, cP 135 C	T316	1.440
Flash Point, C	T48	312
<b>Cigar Cubes Separation at 163C 48 hours</b>		
Softening Point, Top, F	T53	123.5
Softening Point, Bottom, F	T53	152.4
Difference	<18F between top and bot	-28.9
Dynamic Shear Rheometer	T315	
	Temp Pass	<b>76</b>
Phase Angle, degrees		83.3
G* @10 rad/sec, kPa		1.81
G*/sin delta @10 rad/sec, kPa		1.82
	Temp Fail	<b>82</b>
Phase Angle, degrees		85.9
G* @10 rad/sec, kPa		0.93
G*/sin delta @10 rad/sec, kPa		0.93
Pass/Fail Temp		<b>81.2</b>
<b>RTFO Residue Tests:</b>		
Mass Loss, %	T 240	-0.211
Dynamic Shear Rheometer	T 315	
	Temp Pass	<b>82</b>
Phase Angle, degrees		73.2
G* @10 rad/sec, kPa		2.40
G*/sin delta @10 rad/sec, kPa		2.50
	Temp Fail	<b>88</b>
Phase Angle, degrees		75.0
G* @10 rad/sec, kPa		1.29
G*/sin delta @10 rad/sec, kPa		1.33
Pass/Fail Temp		<b>83.2</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>0.41</b>
%R3.2 > (29.37(Jnr,3.2)^-0.2632)	37	<b>28</b>
<b>PAV Residue Tests:</b>		
Dynamic Shear Rheometer	T 315	

	Temp	<b>31</b>
Phase Angle, degrees		44.2
G* @10 rad/sec, kPa		2770
G*sin delta @ 10 rad/sec, kPa		1930
Direct Tension Test	T 314	
	Temp Pass	<b>-12</b>
Strain, 1.0 mm/min		1.87
Stress, Mpa		2.651
Bending Beam Rheometer	T 313	
	Temp Pass	<b>-12</b>
s, 60s, Mpa		154
M-value, 60s		0.310
	Temp Fail	<b>-18</b>
s, 60s, Mpa		288
M-value, 60s		0.275
Notes:		