



ASPHALT TECHNOLOGIES, INC.

To: Federal Lands Highway Division

February 16, 2009

From: Laurand Lewandowski
PRI Asphalt Technologies, Inc.

Subject: Strawman Testing, CRS-2P, Death Valley Project

PROPERTY	TEST METHOD	SPECIFICATION	RESULT
Asphalt Emulsion as Received			
TBD			
Evaporative Method Residue (24 hours @ 25°C, 24 hours @ 60°C, Forced Draft Oven)			
Residue by Evaporation, %	Draft Method		68.9
Water Content, %	ASTM D 95		0.0
Frequency Sweep (25 mm, 0.1 – 100 rad/sec, 12% Strain)	AASHTO T 315		See Graph 1, Table 1
MSCR	70°C	TP 70-08	% Rec (100 Pa)
			J_{nr} (100 Pa) kPa^{-1}
			% Rec (1,000 Pa)
			J_{nr} (1,000 Pa) kPa^{-1}
			% Rec (3,200 Pa)
			J_{nr} (3,200 Pa) kPa^{-1}
			% Rec (10,000 Pa)
			J_{nr} (10,000 Pa) kPa^{-1}
Frequency Sweep (25 mm, 0.1 – 100 rad/sec, 12% Strain)	AASHTO T 315		See Graph 1, Table 2
MSCR	64°C	TP 70-08	% Rec (100 Pa)
			J_{nr} (100 Pa) kPa^{-1}
			% Rec (1,000 Pa)
			J_{nr} (1,000 Pa) kPa^{-1}
			% Rec (3,200 Pa)
			J_{nr} (3,200 Pa) kPa^{-1}
			% Rec (10,000 Pa)
			J_{nr} (10,000 Pa) kPa^{-1}
Frequency Sweep (25 mm, 0.1 – 100 rad/sec, 12% Strain)	AASHTO T 315		See Graph 1, Table 3
MSCR	58°C	TP 70-08	% Rec (100 Pa)
			J_{nr} (100 Pa) kPa^{-1}
			% Rec (1,000 Pa)
			J_{nr} (1,000 Pa) kPa^{-1}
			% Rec (3,200 Pa)
			J_{nr} (3,200 Pa) kPa^{-1}
			% Rec (10,000 Pa)
			J_{nr} (10,000 Pa) kPa^{-1}

Report

BASF 04-02-01

PRI's Accreditations: AASHTO/AAP; IAS-ES, CRRC, Metro-Dade an ISO/IEC 17025 Lab

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RESULTS: (Continued)

PRESSURE AGING RESIDUE (100°C, 300 psi, 20 hr.)					
Frequency Sweep (8 mm, 0.1 – 100 rad/sec, 5% Strain)		70°C	AASHTO T 315	Report	See Graph 2, Table 4
MSCR	% Rec (100 Pa)		TP 70-08		N/A
	J _{nr} (100 Pa) kPa ⁻¹				8.58
	% Rec (1000 Pa)				15.50
	J _{nr} (1000 Pa) kPa ⁻¹				0.56
	% Rec (3,200 Pa)				18.18
	J _{nr} (3,200 Pa) kPa ⁻¹				0.00
	% Rec (10,000 Pa)				28.04
J _{nr} (10,000 Pa) kPa ⁻¹					
Frequency Sweep (8 mm, 0.1 – 100 rad/sec, 5% Strain)		64°C	AASHTO T 315	Report	See Graph 2, Table 5
MSCR	% Rec (100 Pa)		TP 70-08		N/A
	J _{nr} (100 Pa) kPa ⁻¹				19.43
	% Rec (1000 Pa)				1.79
	J _{nr} (1000 Pa) kPa ⁻¹				11.68
	% Rec (3,200 Pa)				6.58
	J _{nr} (3,200 Pa) kPa ⁻¹				3.43
	% Rec (10,000 Pa)				11.06
J _{nr} (10,000 Pa) kPa ⁻¹					
Frequency Sweep (8 mm, 0.1 – 100 rad/sec, 5% Strain)		58°C	AASHTO T 315	Report	See Graph 2, Table 6
MSCR	% Rec (100 Pa)		TP 70-08		N/A
	J _{nr} (100 Pa) kPa ⁻¹				30.52
	% Rec (1000 Pa)				2.11
	J _{nr} (1000 Pa) kPa ⁻¹				24.04
	% Rec (3,200 Pa)				2.36
	J _{nr} (3,200 Pa) kPa ⁻¹				14.29
	% Rec (10,000 Pa)				3.00
J _{nr} (10,000 Pa) kPa ⁻¹					
Frequency Sweep (8 mm, 0.1 – 100 rad/sec, 1% Strain)		10°C	AASHTO T 315	Report	See Graph 3, Table 7
Frequency Sweep (8 mm, 0.1 – 100 rad/sec, 1% Strain)		20°C	AASHTO T 315		See Graph 3, Table 8
Strain Sweep (8 mm, 1 – 50 % Strain, 10 rad/sec)		25°C	New Method		In Progress
Creep Stiffness	Stiffness, MPA (60 sec.)	-18°C	AASHTO T 313	Report	300 max.
	m- Value				0.300 min.
	Stiffness, MPA (60 sec.)	-12°C			300 max.
	m- Value				300 min.

BASF 04-02-01

PRI's Accreditations: AASHTO/AAP; IAS-ES, CRRC, Metro-Dade an ISO/IEC 17025 Lab

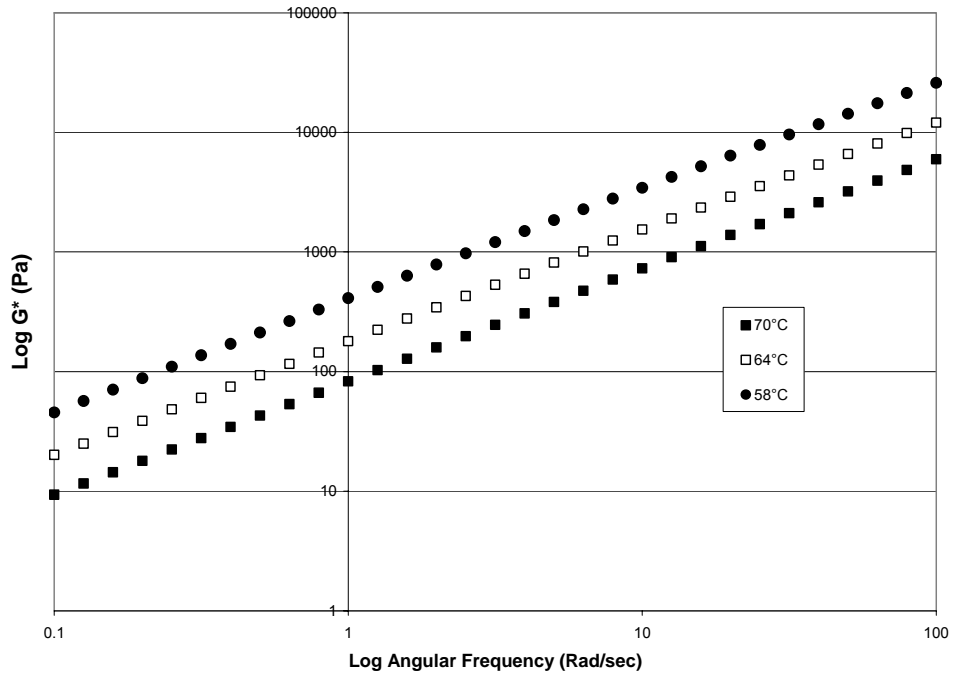
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Graph 1: Frequency Sweep on Residue (58°C, 64°C & 70°C)





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Table 1. Frequency Sweep on Residue (25 mm plates, 2 mm gap, 10% strain (0. 1 to 100 rad/sec))

ang. frequency rad/sec	delta degrees	G' Pa	G'' Pa	G* Pa	osc. stress Pa	Strain %	temperature °C
0.1	85.39	0.7503	9.313	9.343	0.09194	9.9934	70
0.1259	85.39	0.9309	11.54	11.58	0.09804	9.9984	70
0.1585	85.5	1.128	14.34	14.38	0.09477	9.9981	70
0.1995	85.44	1.426	17.87	17.93	0.09671	9.997	70
0.2512	85.56	1.726	22.21	22.28	0.09743	9.9971	70
0.3162	85.6	2.128	27.65	27.73	0.09643	9.9968	70
0.3981	85.49	2.709	34.33	34.44	0.09785	9.9943	70
0.5012	85.47	3.387	42.78	42.92	0.09276	9.9946	70
0.631	85.47	4.214	53.21	53.38	0.09222	9.9935	70
0.7943	85.43	5.289	66.22	66.43	0.0909	9.9925	70
1	85.39	6.641	82.43	82.7	0.09207	9.9892	70
1.259	85.35	8.339	102.5	102.9	0.08029	9.9902	70
1.585	85.25	10.6	127.6	128	0.08489	9.9865	70
1.995	85.27	13.13	158.6	159.1	0.08491	9.9884	70
2.512	85.1	16.88	197.1	197.8	0.07148	9.9826	70
3.162	85.02	21.37	245.1	246.1	0.06491	9.9826	70
3.981	84.87	27.33	304.6	305.8	0.06475	9.9778	70
5.012	84.75	34.88	379.4	381	0.04858	9.976	70
6.31	84.55	44.92	471	473.2	0.03635	9.9723	70
7.943	84.38	57.52	584.5	587.4	0.03447	9.9692	70
10	84.2	73.58	724.5	728.2	0.01441	9.9683	70
12.59	84.01	94.23	897.5	902.4	-0.01155	9.9679	70
15.85	83.83	120.3	1112	1118	-0.03324	9.9652	70
19.95	83.64	153.2	1375	1384	-0.05745	9.9679	70
25.12	83.48	194.2	1700	1711	-0.09439	9.9701	70
31.62	83.37	243.7	2098	2112	-0.1195	9.9769	70
39.81	83.34	301.7	2586	2603	-0.1364	9.9901	70
50.12	83.35	371.7	3187	3208	-0.1776	9.9958	70
63.1	83.47	449	3922	3948	-0.2437	10.018	70
79.43	83.75	527.7	4820	4849	-0.2575	10.033	70
100	84.22	598.9	5921	5951	-0.3144	10.058	70



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Table 2. Frequency Sweep on Residue (25 mm plates, 2 mm gap, 10% strain (0. 1 to 100 rad/sec))

ang. frequency	delta	G'	G''	G*	osc. stress	Strain %	temperature
rad/sec	degrees	Pa	Pa	Pa	Pa		°C
0.1	86.35	1.286	20.15	20.19	6.18	9.9827	64
0.1259	86.43	1.561	25.01	25.06	7.68	9.9958	64
0.1585	86.33	2.001	31.16	31.22	9.57	9.9933	64
0.1995	86.28	2.52	38.74	38.82	11.9	9.9938	64
0.2512	86.17	3.237	48.3	48.41	14.84	9.9912	64
0.3162	86.11	4.094	60.18	60.32	18.49	9.9916	64
0.3981	85.94	5.31	74.82	75.01	22.99	9.9885	64
0.5012	85.84	6.769	93.13	93.37	28.61	9.9887	64
0.631	85.7	8.725	115.9	116.3	35.61	9.9852	64
0.7943	85.55	11.23	144.3	144.7	44.32	9.9847	64
1	85.37	14.54	179.5	180	55.12	9.9806	64
1.259	85.17	18.85	223.3	224.1	68.58	9.9794	64
1.585	84.99	24.34	277.4	278.5	85.2	9.9749	64
1.995	84.78	31.53	344.8	346.2	105.89	9.9733	64
2.512	84.55	40.88	428.2	430.1	131.45	9.9669	64
3.162	84.29	53.1	531.1	533.7	163.06	9.9656	64
3.981	84.02	68.91	658.3	661.9	202.04	9.9587	64
5.012	83.74	89.45	815.8	820.7	250.34	9.9563	64
6.31	83.44	116.1	1010	1017	309.78	9.9494	64
7.943	83.14	150.3	1249	1258	383.16	9.9483	64
10	82.83	194.1	1543	1556	473.11	9.9437	64
12.59	82.53	249.6	1903	1920	583.37	9.9448	64
15.85	82.24	319.9	2346	2368	718.66	9.9428	64
19.95	81.95	408.6	2889	2917	884.43	9.9448	64
25.12	81.69	519	3554	3592	1087.71	9.9507	64
31.62	81.47	654.9	4366	4415	1335.62	9.9564	64
39.81	81.28	822.9	5363	5426	1641.34	9.9688	64
50.12	81.16	1024	6583	6662	2016.24	9.9765	64
63.1	81.09	1265	8069	8168	2482.73	10.003	64
79.43	81.1	1545	9873	9993	3061.41	10.018	64
100	81.22	1863	12070	12210	3808.88	10.049	64



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Table 3. Frequency Sweep on Residue (25 mm plates, 2 mm gap, 10% strain (0. 1 to 100 rad/sec))

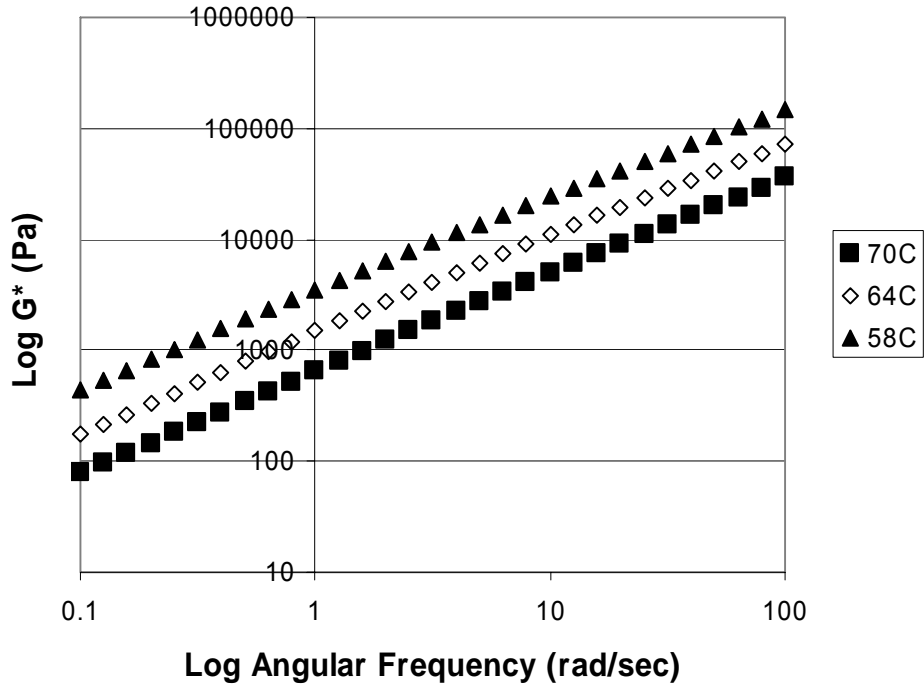
Angular Freq rad/sec	delta degrees	G' Pa	G'' Pa	G* Pa	osc. torque Micro N-n	Strain %	temperature °C
0.1	86.99	2.389	45.44	45.5	13.9	9.9597	58
0.1259	86.92	3.047	56.56	56.64	17.37	9.9931	58
0.1585	86.77	3.981	70.5	70.61	21.64	9.9904	58
0.1995	86.6	5.216	87.86	88.01	26.98	9.9901	58
0.2512	86.41	6.877	109.6	109.8	33.63	9.9867	58
0.3162	86.23	8.992	136.5	136.8	41.91	9.9866	58
0.3981	86.02	11.84	170	170.4	52.19	9.9818	58
0.5012	85.8	15.55	211.8	212.3	65.02	9.9813	58
0.631	85.55	20.51	263.7	264.5	80.96	9.9758	58
0.7943	85.27	27.19	328.7	329.8	100.9	9.9734	58
1	84.98	35.89	408.6	410.2	125.44	9.9678	58
1.259	84.66	47.41	507.7	509.9	155.89	9.9651	58
1.585	84.32	62.63	629.8	632.9	193.33	9.9571	58
1.995	83.97	82.45	781	785.4	239.81	9.9543	58
2.512	83.6	108.5	967.7	973.7	297.03	9.9448	58
3.162	83.22	142.4	1198	1206	367.85	9.9416	58
3.981	82.85	185.7	1481	1492	454.6	9.9339	58
5.012	82.44	242.5	1827	1843	561.17	9.9312	58
6.31	82.04	314.5	2250	2272	691.37	9.9264	58
7.943	81.66	405.7	2767	2796	850.69	9.9266	58
10	81.28	521.8	3404	3443	1046.5	9.9212	58
12.59	80.92	668.3	4181	4234	1286.17	9.9224	58
15.85	80.57	852.2	5131	5202	1579.66	9.9263	58
19.95	80.25	1082	6297	6390	1938.5	9.9255	58
25.12	79.93	1369	7708	7829	2376.72	9.9444	58
31.62	79.68	1716	9428	9582	2905.94	9.9482	58
39.81	79.46	2141	11510	11710	3552.61	9.9726	58
50.12	79.24	2669	14040	14290	4329.46	9.9757	58
63.1	79.08	3312	17160	17470	5288.43	9.9926	58
79.43	78.95	4086	20930	21320	6445	10.002	58
100	78.9	4994	25460	25950	7863.38	10.045	58



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Graph 1: Frequency Sweep on PAV Residue (58°C, 64°C & 70°C)





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Table 4. Frequency Sweep on PAV Residue (8 mm plates, 2 mm gap, 5% strain (0.1 to 100 rad/sec))

ang. frequency rad/sec	delta degrees	frequency Hz	G' Pa	G'' Pa	G* Pa	strain	temperature °C
0.1	85.39	0.01592	0.7503	9.313	9.343	0.049996	70
0.1259	85.39	0.02004	0.9309	11.54	11.58	0.049998	70
0.1585	85.5	0.02522	1.128	14.34	14.38	0.049999	70
0.1995	85.44	0.03176	1.426	17.87	17.93	0.049997	70
0.2512	85.56	0.03998	1.726	22.21	22.28	0.049998	70
0.3162	85.6	0.05033	2.128	27.65	27.73	0.049997	70
0.3981	85.49	0.06336	2.709	34.33	34.44	0.049994	70
0.5012	85.47	0.07977	3.387	42.78	42.92	0.049992	70
0.631	85.47	0.1004	4.214	53.21	53.38	0.049993	70
0.7943	85.43	0.1264	5.289	66.22	66.43	0.049984	70
1	85.39	0.1592	6.641	82.43	82.7	0.049973	70
1.259	85.35	0.2004	8.339	102.5	102.9	0.049974	70
1.585	85.25	0.2522	10.6	127.6	128	0.04997	70
1.995	85.27	0.3176	13.13	158.6	159.1	0.049967	70
2.512	85.1	0.3998	16.88	197.1	197.8	0.049962	70
3.162	85.02	0.5033	21.37	245.1	246.1	0.049954	70
3.981	84.87	0.6336	27.33	304.6	305.8	0.049952	70
5.012	84.75	0.7977	34.88	379.4	381	0.049939	70
6.31	84.55	1.004	44.92	471	473.2	0.049937	70
7.943	84.38	1.264	57.52	584.5	587.4	0.04992	70
10	84.2	1.592	73.58	724.5	728.2	0.04993	70
12.59	84.01	2.004	94.23	897.5	902.4	0.049919	70
15.85	83.83	2.522	120.3	1112	1118	0.049911	70
19.95	83.64	3.176	153.2	1375	1384	0.049926	70
25.12	83.48	3.998	194.2	1700	1711	0.049932	70
31.62	83.37	5.033	243.7	2098	2112	0.049965	70
39.81	83.34	6.336	301.7	2586	2603	0.04998	70
50.12	83.35	7.977	371.7	3187	3208	0.050045	70
63.1	83.47	10.04	449	3922	3948	0.050103	70
79.43	83.75	12.64	527.7	4820	4849	0.050174	70
100	84.22	15.92	598.9	5921	5951	0.050223	70



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Table 5. Frequency Sweep on PAV Residue (8 mm plates, 2 mm gap, 5% strain (0. 1 to 100 rad/sec))

ang. frequency rad/sec	Delta Degrees	G' Pa	G'' Pa	G* Pa	strain	temperature °C
0.1	80.45	12.94	76.91	77.99	0.049996	64
0.1259	81.29	14.51	94.76	95.87	0.049998	64
0.1585	82.45	15.52	117.1	118.1	0.049999	64
0.1995	82.79	18.23	144.1	145.2	0.049997	64
0.2512	83.53	20.28	178.7	179.9	0.049998	64
0.3162	83.84	23.94	222	223.3	0.049997	64
0.3981	83.78	29.8	273.3	274.9	0.049994	64
0.5012	83.83	36.77	340.3	342.2	0.049992	64
0.631	83.95	44.66	421.6	424	0.049993	64
0.7943	83.59	58.42	520	523.2	0.049984	64
1	83.24	76.51	645.7	650.2	0.049973	64
1.259	82.91	98.74	794.5	800.6	0.049974	64
1.585	82.32	132.2	979.8	988.7	0.04997	64
1.995	81.98	169.9	1206	1218	0.049967	64
2.512	81.42	223.9	1484	1501	0.049962	64
3.162	80.89	291.5	1819	1842	0.049954	64
3.981	80.23	383.2	2224	2257	0.049952	64
5.012	79.62	499.4	2728	2773	0.049939	64
6.31	78.92	652.7	3333	3396	0.049937	64
7.943	78.21	845.7	4053	4140	0.04992	64
10	77.48	1093	4922	5042	0.04993	64
12.59	76.68	1416	5981	6146	0.049919	64
15.85	75.91	1823	7264	7489	0.049911	64
19.95	74.93	2365	8783	9096	0.049926	64
25.12	73.93	3058	10620	11050	0.049932	64
31.62	72.72	3980	12790	13390	0.049965	64
39.81	71.34	5212	15430	16290	0.04998	64
50.12	69.65	6890	18570	19810	0.050045	64
63.1	67.79	9069	22210	23990	0.050103	64
79.43	65.76	12000	26660	29240	0.050174	64
100	61.97	16990	31920	36160	0.050223	64



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Table 6. Frequency Sweep on PAV Residue (8 mm plates, 2 mm gap, 5% strain (0. 1 to 100 rad/sec))

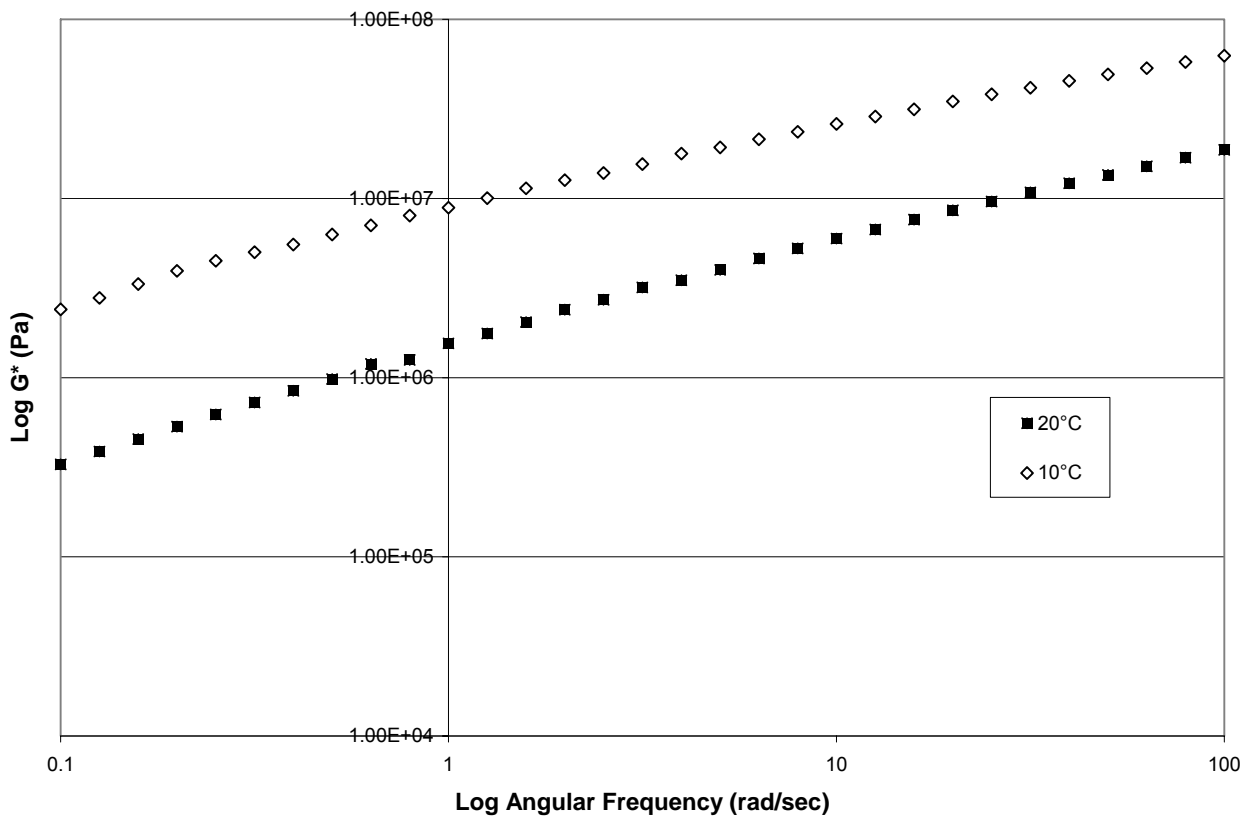
ang. frequency	delta	G'	G''	G*	strain	temperature
rad/sec	degrees	Pa	Pa	Pa		°C
0.1	83.09	52.43	432.9	436.1	0.049983	58
0.1259	83.06	65.11	535	538.9	0.049985	58
0.1585	82.74	84.25	661.4	666.7	0.049977	58
0.1995	82.39	109.3	818.3	825.5	0.04997	58
0.2512	81.99	142.4	1012	1022	0.04997	58
0.3162	81.5	186.3	1247	1261	0.04996	58
0.3981	80.98	243	1531	1551	0.049959	58
0.5012	80.45	316.3	1879	1906	0.049947	58
0.631	79.86	413.7	2313	2349	0.04994	58
0.7943	79.28	535.4	2828	2879	0.049929	58
1	78.67	691.1	3448	3517	0.049925	58
1.259	78.06	889.7	4206	4299	0.049907	58
1.585	77.44	1142	5126	5251	0.049904	58
1.995	76.8	1460	6223	6392	0.049882	58
2.512	76.14	1859	7537	7763	0.049882	58
3.162	75.53	2357	9135	9435	0.049854	58
3.981	74.89	2976	11020	11420	0.049855	58
5.012	74.27	3741	13280	13800	0.04983	58
6.31	73.65	4691	15990	16660	0.049801	58
7.943	73.03	5882	19280	20160	0.049811	58
10	72.47	7304	23120	24250	0.0498	58
12.59	71.88	9033	27610	29050	0.049795	58
15.85	71.3	11200	33080	34920	0.049801	58
19.95	70.72	13850	39610	41960	0.049799	58
25.12	70.14	17050	47190	50180	0.049849	58
31.62	69.56	20950	56200	59980	0.049862	58
39.81	68.95	25760	66930	71720	0.04992	58
50.12	68.26	31720	79550	85640	0.050024	58
63.1	67.56	39000	94410	1.02E+05	0.05006	58
79.43	66.76	47950	1.12E+05	1.22E+05	0.050233	58
100	65.77	59570	1.32E+05	1.45E+05	0.050386	58



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**Graph 3. Intermediate Temperature Frequency Sweep on PAV Residue
(8 mm plates, 2 mm gap, 5% strain (0. 1 to 100 rad/sec))**



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**Table 7. Intermediate Temperature Frequency Sweep on PAV Residue
(8 mm plates, 2 mm gap, 5% strain (0. 1 to 100 rad/sec))**

ang. frequency rad/sec	delta degrees	G' Pa	G'' Pa	G* Pa	shear stress Pa	% strain	temperature °C
0.1	53.78	1.42E+06	1.94E+06	2.41E+06	80.29	1.0067	10
0.1259	53.32	1.67E+06	2.24E+06	2.79E+06	67.52	0.97433	10
0.1585	52.93	2.01E+06	2.66E+06	3.33E+06	-78.16	0.95898	10
0.1995	50.83	2.50E+06	3.06E+06	3.95E+06	-951.9	0.95501	10
0.2512	50.43	2.86E+06	3.46E+06	4.49E+06	43.77	0.98151	10
0.3162	49.58	3.25E+06	3.81E+06	5.01E+06	144.7	0.98976	10
0.3981	49.14	3.63E+06	4.19E+06	5.54E+06	-36.48	0.99665	10
0.5012	48.27	4.20E+06	4.71E+06	6.31E+06	-384.5	0.97793	10
0.631	47.45	4.79E+06	5.22E+06	7.08E+06	-62.45	0.98304	10
0.7943	47.01	5.47E+06	5.87E+06	8.02E+06	163.1	0.97762	10
1	46.08	6.17E+06	6.40E+06	8.89E+06	-133.8	0.99066	10
1.259	45.08	7.11E+06	7.13E+06	1.01E+07	-344.6	0.97482	10
1.585	44.6	8.12E+06	8.00E+06	1.14E+07	-199	0.97182	10
1.995	43.72	9.16E+06	8.76E+06	1.27E+07	507.2	0.98237	10
2.512	43.16	1.01E+07	9.51E+06	1.39E+07	160.4	0.99249	10
3.162	42.39	1.15E+07	1.05E+07	1.56E+07	-36.4	0.97561	10
3.981	41.55	1.34E+07	1.18E+07	1.78E+07	312	0.95405	10
5.012	41	1.46E+07	1.27E+07	1.93E+07	-343.8	0.99464	10
6.31	40.25	1.64E+07	1.39E+07	2.14E+07	2.469	0.97396	10
7.943	39.69	1.81E+07	1.50E+07	2.35E+07	223.3	0.98124	10
10	39	2.03E+07	1.64E+07	2.61E+07	82.49	0.9693	10
12.59	38.35	2.25E+07	1.78E+07	2.87E+07	-99.07	0.97209	10
15.85	37.74	2.49E+07	1.93E+07	3.15E+07	-169.9	0.97207	10
19.95	37.07	2.78E+07	2.10E+07	3.49E+07	-57.11	0.96373	10
25.12	36.43	3.08E+07	2.27E+07	3.82E+07	-104.9	0.96565	10
31.62	35.88	3.36E+07	2.43E+07	4.15E+07	-7.885	0.9704	10
39.81	35.28	3.71E+07	2.62E+07	4.54E+07	-53.66	0.9624	10
50.12	34.71	4.05E+07	2.81E+07	4.93E+07	-66.27	0.96495	10
63.1	34.15	4.42E+07	3.00E+07	5.35E+07	-56.5	0.96383	10
79.43	33.6	4.81E+07	3.20E+07	5.78E+07	-81.36	0.96163	10
100	33.02	5.26E+07	3.42E+07	6.27E+07	-40.04	0.95477	10

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**Table 8. Intermediate Temperature Frequency Sweep on PAV Residue
(8 mm plates, 2 mm gap, 5% strain (0. 1 to 100 rad/sec))**

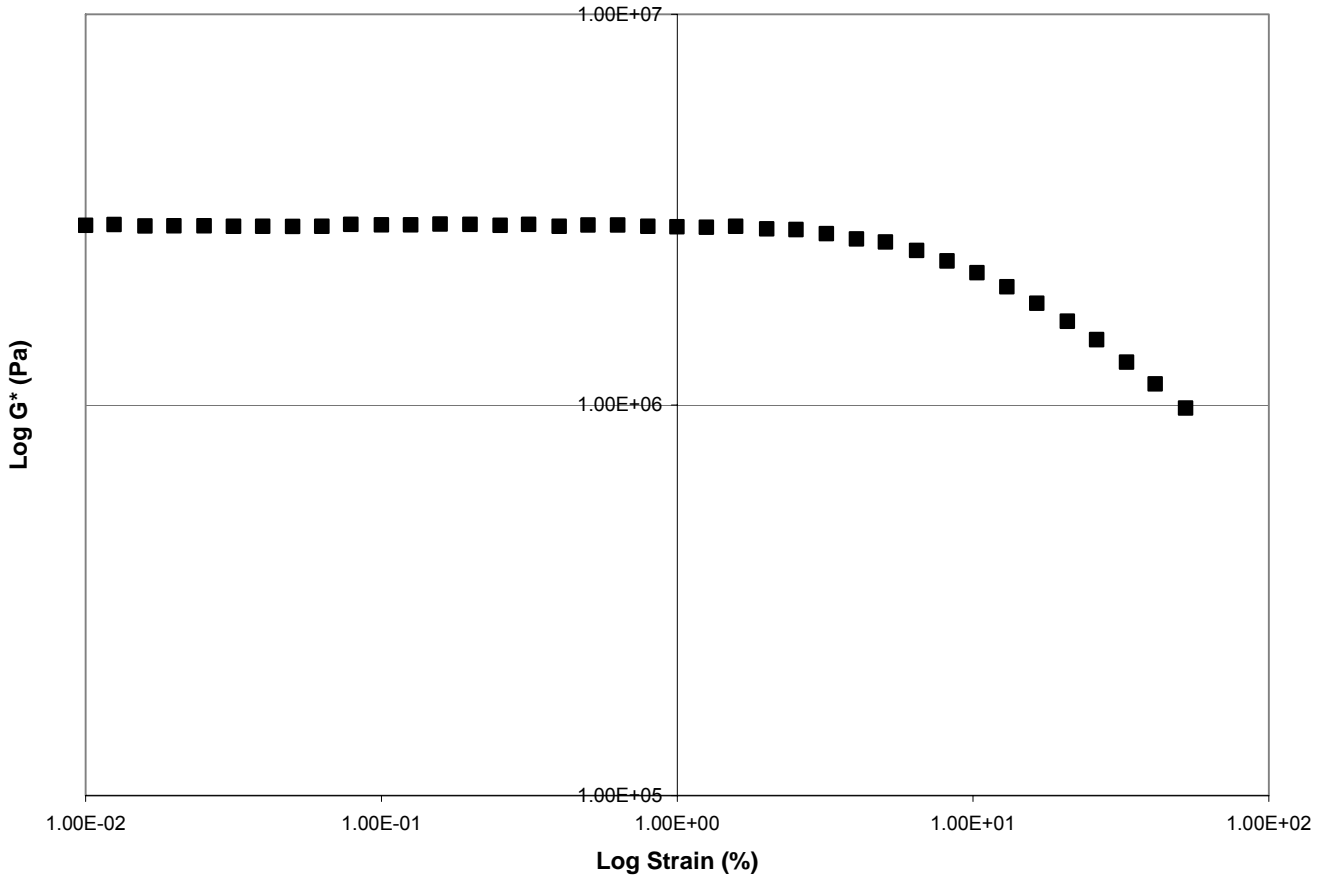
ang. frequency rad/sec	delta degrees	G' Pa	G'' Pa	G* Pa	shear stress Pa	% strain	temperature °C
0.1	63.02	1.49E+05	2.92E+05	3.28E+05	-12.94	0.99857	20
0.1259	62.57	1.78E+05	3.43E+05	3.87E+05	-6.827	0.98322	20
0.1585	61.69	2.16E+05	4.00E+05	4.54E+05	1.501	0.98098	20
0.1995	60.94	2.59E+05	4.66E+05	5.33E+05	-27.52	0.98013	20
0.2512	60.27	3.09E+05	5.42E+05	6.24E+05	-10.83	0.98085	20
0.3162	59.57	3.68E+05	6.27E+05	7.27E+05	-3.527	0.98083	20
0.3981	59	4.36E+05	7.25E+05	8.46E+05	-9.564	0.98057	20
0.5012	58.35	5.16E+05	8.36E+05	9.83E+05	-38.54	0.98014	20
0.631	58.27	6.27E+05	1.01E+06	1.19E+06	16.59	0.96613	20
0.7943	57.24	6.80E+05	1.06E+06	1.26E+06	42.68	1.018	20
1	56.52	8.57E+05	1.30E+06	1.55E+06	-34.11	0.95393	20
1.259	55.51	1.00E+06	1.46E+06	1.77E+06	-20.52	0.98536	20
1.585	55.04	1.17E+06	1.68E+06	2.05E+06	1.742	0.97807	20
1.995	54.28	1.40E+06	1.95E+06	2.40E+06	104.3	0.97066	20
2.512	53.63	1.61E+06	2.19E+06	2.72E+06	91.73	0.98697	20
3.162	52.76	1.93E+06	2.54E+06	3.19E+06	8.754	0.96685	20
3.981	52.37	2.14E+06	2.78E+06	3.51E+06	25.85	1.0024	20
5.012	51.74	2.47E+06	3.14E+06	4.00E+06	-29.68	0.98231	20
6.31	50.96	2.91E+06	3.59E+06	4.63E+06	8.57	0.97271	20
7.943	50.26	3.37E+06	4.05E+06	5.27E+06	-6.794	0.98315	20
10	49.58	3.88E+06	4.56E+06	5.99E+06	-5.367	0.98107	20
12.59	48.96	4.41E+06	5.06E+06	6.71E+06	-12.06	0.98961	20
15.85	48.28	5.07E+06	5.68E+06	7.61E+06	-43.77	0.98262	20
19.95	47.61	5.79E+06	6.34E+06	8.59E+06	-24.65	0.98603	20
25.12	46.97	6.58E+06	7.05E+06	9.64E+06	-36.11	0.98596	20
31.62	46.3	7.49E+06	7.84E+06	1.08E+07	-41.72	0.98507	20
39.81	45.65	8.49E+06	8.69E+06	1.22E+07	-40.87	0.98731	20
50.12	45.04	9.57E+06	9.58E+06	1.35E+07	-46.91	0.99155	20
63.1	44.38	1.08E+07	1.06E+07	1.52E+07	-56.13	0.98554	20
79.43	43.71	1.22E+07	1.17E+07	1.69E+07	-46.29	0.98754	20
100	43.12	1.37E+07	1.28E+07	1.87E+07	-65.67	0.99247	20



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Graph 4. Strain Sweep on PAV Residue
(8 mm plates, 2 mm gap, 0.01-50 % strain (10 rad/sec))



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**Table 9. Strain Sweep on PAV Residue
(8 mm plates, 2 mm gap, 0.01% -50% strain, 10 rad/sec)**

ang. frequency	delta	G'	G''	G*	% strain	temperature
rad/sec	degrees	Pa	Pa	Pa		°C
10	54.84	1.66E+06	2.36E+06	2.88E+06	1.00E-02	25
10	53.76	1.71E+06	2.34E+06	2.90E+06	0.012489	25
10	53.76	1.70E+06	2.32E+06	2.87E+06	0.015888	25
10	53.71	1.70E+06	2.32E+06	2.88E+06	0.019897	25
10	53.73	1.70E+06	2.32E+06	2.87E+06	0.025171	25
10	53.75	1.69E+06	2.31E+06	2.86E+06	0.031601	25
10	53.77	1.69E+06	2.31E+06	2.87E+06	0.039717	25
10	53.76	1.69E+06	2.31E+06	2.86E+06	0.050122	25
10	53.76	1.69E+06	2.31E+06	2.87E+06	0.062868	25
10	53.72	1.72E+06	2.34E+06	2.90E+06	0.07881	25
10	53.73	1.71E+06	2.33E+06	2.89E+06	0.099969	25
10	53.72	1.71E+06	2.33E+06	2.89E+06	0.12554	25
10	53.69	1.72E+06	2.34E+06	2.90E+06	0.15779	25
10	53.72	1.72E+06	2.34E+06	2.90E+06	0.19938	25
10	53.72	1.71E+06	2.33E+06	2.88E+06	0.25213	25
10	53.69	1.72E+06	2.34E+06	2.90E+06	0.31464	25
10	53.75	1.69E+06	2.31E+06	2.87E+06	0.39953	25
10	53.73	1.71E+06	2.33E+06	2.89E+06	0.49929	25
10	53.76	1.71E+06	2.33E+06	2.89E+06	0.62901	25
10	53.8	1.69E+06	2.31E+06	2.87E+06	0.79547	25
10	53.86	1.69E+06	2.31E+06	2.86E+06	0.99988	25
10	53.94	1.68E+06	2.30E+06	2.85E+06	1.2571	25
10	53.97	1.69E+06	2.32E+06	2.87E+06	1.5772	25
10	54.16	1.65E+06	2.29E+06	2.82E+06	2.009	25
10	54.38	1.64E+06	2.28E+06	2.81E+06	2.5226	25
10	54.73	1.58E+06	2.24E+06	2.74E+06	3.1933	25
10	55.25	1.52E+06	2.19E+06	2.66E+06	4.0383	25
10	55.85	1.47E+06	2.16E+06	2.61E+06	5.0667	25
10	56.71	1.37E+06	2.08E+06	2.49E+06	6.4464	25
10	57.75	1.25E+06	1.98E+06	2.34E+06	8.1725	25
10	58.87	1.13E+06	1.87E+06	2.18E+06	10.311	25
10	60.11	1.00E+06	1.74E+06	2.01E+06	13.026	25
10	61.4	8.72E+05	1.60E+06	1.82E+06	16.448	25
10	62.63	7.52E+05	1.45E+06	1.64E+06	20.878	25
10	63.69	6.51E+05	1.32E+06	1.47E+06	26.17	25
10	64.8	5.48E+05	1.17E+06	1.29E+06	33.057	25
10	65.78	4.64E+05	1.03E+06	1.13E+06	41.378	25
10	66.94	3.84E+05	9.03E+05	9.81E+05	52.395	25

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