

June 25, 2009

• **TEST REPORT** •

PN 85164

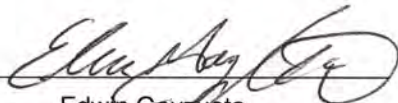
PO 4965

**Engineering Department
Dynamic Characterization**

Prepared For:

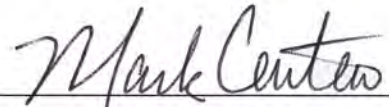
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Subject: Dynamic Characterization and Coefficient of Friction Testing

Received: One (1) material identified as 0.375 Inch, 50 Durometer, Shore A.

Dynamic Characterization:

Test Parameters:

Specimen:	2.0 inch x 2.0 inch x 3/8 inch thk.
Pressure Sweep:	25-300 Psi, 25 Psi increments (Compression)
Frequency Sweep:	10-60 Hz, 10 Hz increments
Amplitude:	0.001 inch (p-p)
Equipment:	MTS 831.20 Elastomer Test System
Test Fixture:	Compression Platens
Temperature:	23°C

Procedure: Each specimen was stabilized at test temperature for at least 24 hours prior to being mounted on the MTS machine for testing. The actuator was positioned, the load and displacement were zeroed, and the test was begun following the parameters above.

Test Results:

Specified Frequency	Specified Mean Level	Pressure	Overall Displacement	Neoprene Displacement	Damping Coefficient
Hz	N	PSI	mm	%	N-Sec/mm
10	444.82	25.00	0.42	6.62	39.29
10	889.64	50.00	0.80	12.58	37.21
10	1334.47	75.00	1.40	22.03	38.29
10	1779.29	100.00	1.96	30.85	48.84
10	2224.11	125.00	2.33	36.63	67.01
10	2668.93	150.00	2.56	40.30	75.04
10	3113.76	175.00	2.74	43.07	91.18
10	3558.58	200.00	2.87	45.15	106.59
10	4003.40	225.00	2.97	46.75	111.50
10	4448.22	250.00	3.05	48.07	121.53
10	4893.04	275.00	3.12	49.11	137.41
10	5337.87	300.00	3.18	50.00	130.05

Figure 1: Dynamic Characterization Results At 10 Hz

Specified Frequency	Specified Mean Level	Pressure	Overall Displacement	Neoprene Displacement	Damping Coefficient
Hz	N	PSI	mm	%	N-Sec/mm
20	444.82	25.00	0.45	7.08	20.96
20	889.64	50.00	0.87	13.63	19.52
20	1334.47	75.00	1.49	23.47	20.32
20	1779.29	100.00	2.02	31.86	26.98
20	2224.11	125.00	2.37	37.29	35.73
20	2668.93	150.00	2.59	40.81	44.20
20	3113.76	175.00	2.76	43.45	50.00
20	3558.58	200.00	2.88	45.43	56.38
20	4003.40	225.00	2.98	46.97	60.42
20	4448.22	250.00	3.06	48.23	63.48
20	4893.04	275.00	3.13	49.25	67.53
20	5337.87	300.00	3.18	50.11	68.19

Figure 2: Dynamic Characterization Results At 20 Hz

Specified Frequency	Specified Mean Level	Pressure	Overall Displacement	Neoprene Displacement	Damping Coefficient
Hz	N	PSI	mm	%	N-Sec/mm
30	444.82	25.00	0.47	7.42	14.21
30	889.64	50.00	0.92	14.44	13.03
30	1334.47	75.00	1.56	24.52	14.37
30	1779.29	100.00	2.07	32.59	19.46
30	2224.11	125.00	2.40	37.76	25.26
30	2668.93	150.00	2.61	41.17	31.08
30	3113.76	175.00	2.78	43.71	34.79
30	3558.58	200.00	2.90	45.63	38.45
30	4003.40	225.00	2.99	47.13	42.70
30	4448.22	250.00	3.07	48.35	42.66
30	4893.04	275.00	3.13	49.35	45.66
30	5337.87	300.00	3.19	50.18	46.94

Figure 3: Dynamic Characterization Results At 30 Hz

Specified Frequency	Specified Mean Level	Pressure	Overall Displacement	Neoprene Displacement	Damping Coefficient
Hz	N	PSI	mm	%	N-Sec/mm
40	444.82	25.00	0.49	7.67	11.19
40	889.64	50.00	0.96	15.08	10.02
40	1334.47	75.00	1.61	25.32	11.59
40	1779.29	100.00	2.11	33.16	15.49
40	2224.11	125.00	2.42	38.14	19.41
40	2668.93	150.00	2.63	41.46	23.43
40	3113.76	175.00	2.79	43.91	27.00
40	3558.58	200.00	2.91	45.79	29.66
40	4003.40	225.00	3.00	47.27	31.94
40	4448.22	250.00	3.08	48.46	33.45
40	4893.04	275.00	3.14	49.44	34.41
40	5337.87	300.00	3.19	50.25	37.04

Figure 4: Dynamic Characterization Results At 40 Hz

Specified Frequency	Specified Mean Level	Pressure	Overall Displacement	Neoprene Displacement	Damping Coefficient
Hz	N	PSI	mm	%	N-Sec/mm
50	444.82	25.00	0.50	7.89	9.15
50	889.64	50.00	0.99	15.63	8.09
50	1334.47	75.00	1.65	25.97	9.62
50	1779.29	100.00	2.13	33.62	12.86
50	2224.11	125.00	2.44	38.44	16.45
50	2668.93	150.00	2.65	41.70	19.40
50	3113.76	175.00	2.80	44.10	22.00
50	3558.58	200.00	2.92	45.92	24.21
50	4003.40	225.00	3.01	47.37	26.62
50	4448.22	250.00	3.08	48.55	27.73
50	4893.04	275.00	3.14	49.50	27.77
50	5337.87	300.00	3.19	50.31	30.77

Figure 5: Dynamic Characterization Results At 50 Hz

Specified Frequency	Specified Mean Level	Pressure	Overall Displacement	Neoprene Displacement	Damping Coefficient
Hz	N	PSI	mm	%	N-Sec/mm
60	444.82	25.00	0.51	8.07	7.82
60	889.64	50.00	1.02	16.13	6.96
60	1334.47	75.00	1.68	26.53	8.38
60	1779.29	100.00	2.16	34.01	11.28
60	2224.11	125.00	2.46	38.72	14.06
60	2668.93	150.00	2.66	41.90	16.69
60	3113.76	175.00	2.81	44.25	18.71
60	3558.58	200.00	2.92	46.05	20.23
60	4003.40	225.00	3.01	47.47	22.26
60	4448.22	250.00	3.09	48.63	24.22
60	4893.04	275.00	3.15	49.57	24.27
60	5337.87	300.00	3.20	50.36	26.82

Figure 6: Dynamic Characterization Results At 60 Hz

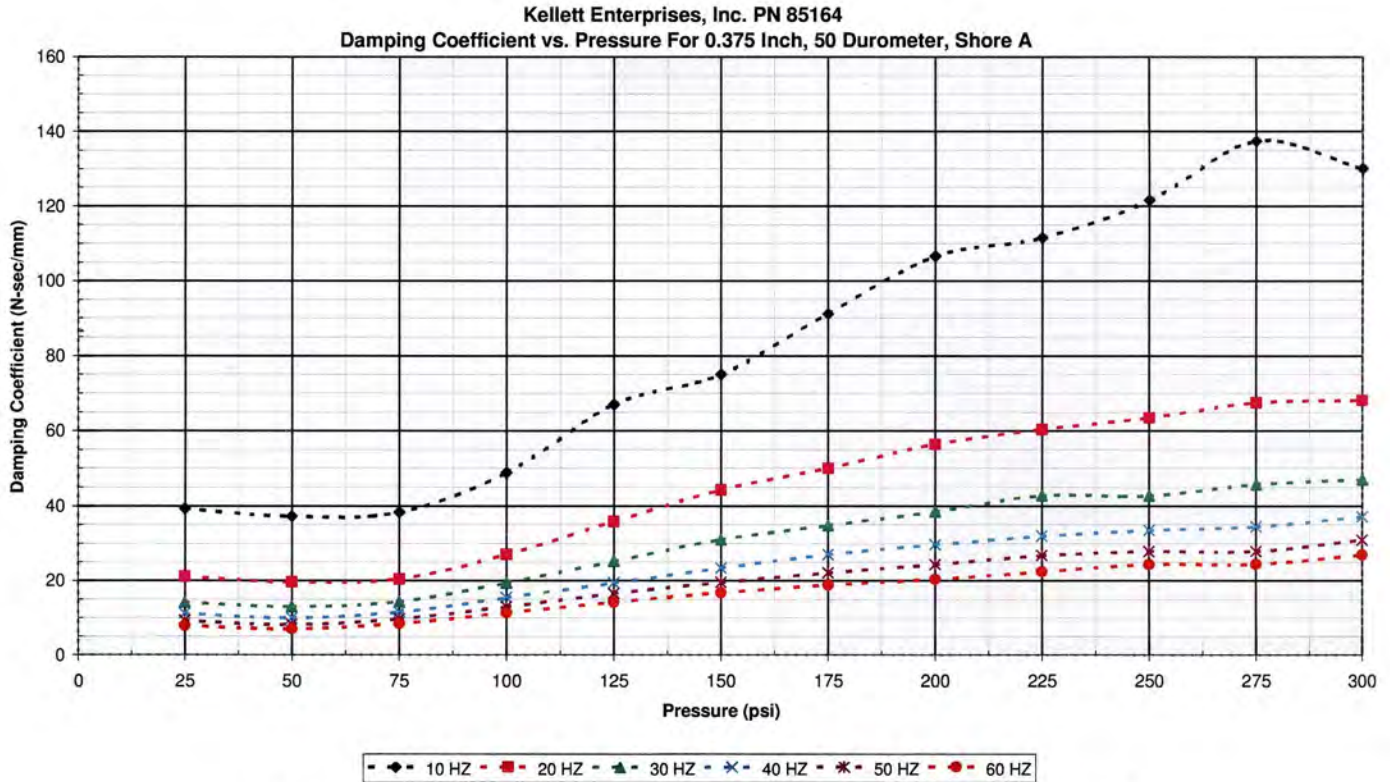


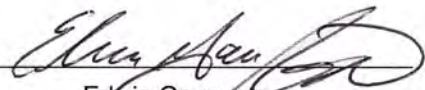
Figure 7: Dynamic Characterization Damping Coefficient vs. Pressure

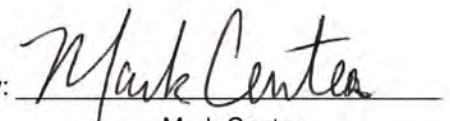
Coefficient Of Friction, ASTM D 1894-99 (Modified):

Procedure: Two specimens were prepared from the submitted sample by mounting a 2" x 2" section on a steel plate. Each specimen was pulled at 6 in/min. across a section of polished steel. The sample was loaded with a 200-gram weight.

Results	0.375 Inch, 50 Durometer, Shore A
Static, u	*0.999
Dynamic, u	*0.988

*The average was reported

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