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## APPENDIX A

1. Data of the wall shear stress, the apparent strain rate of LLDPE( L2009F)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $190$  °C . ( Figure3.1)

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}(max)$ (dynes/cm <sup>2</sup> )	SD
0.50	25.37		13.54					2.61E+05				
2.50	81.25		67.68					8.37E+05				
5.00	180.76		135.35					1.86E+06				
6.30	220.32		170.54					2.27E+06				
7.20	231.93		194.90					2.39E+06				
9.80	233.88		265.29	255.00	270.00	263.43	7.67	2.41E+06	2.25E+06	2.57E+06	2.41E+06	2.41E+06
12.50	304.98		338.38					3.14E+06				
12.80	328.62		346.50					3.39E+06				
13.10	334.37		354.62					3.45E+06				
14.00	340.21		378.98					3.51E+06				
15.20	347.85		411.46					3.58E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}$ (max) (dynes/cm <sup>2</sup> )	SD
16.50	355.36		446.66					3.66E+06				
17.00	359.44		460.19					3.70E+06				
20.00	367.91		541.40					3.79E+06				
25.00	338.04	342.35	676.75	679.00	674.00	676.58	2.50	3.48E+06	3.32E+06	3.61E+06	3.47E+06	1.45E+05
30.00	362.64	343.51	812.10					3.74E+06				
40.00	366.87	345.34	1082.80					3.78E+06				
45.00	366.33	347.16	1218.15					3.78E+06				
55.00	368.42	350.83	1488.85					3.80E+06				
60.00	369.52	355.43	1624.20					3.81E+06				
68.00	393.45		1840.76					4.05E+06				
70.00	390.36		1894.90					4.02E+06				
98.00	400.58		2652.86					4.13E+06				
105.00	410.81		2842.35					4.23E+06				
108.00	414.30		2923.56					4.27E+06				
112.00	434.70		3031.84	3010.00	3030.00	3023.95	12.11	4.48E+06	4.35E+06	4.53E+06	4.45E+06	9.29E+04
115.00	427.78		3113.05					4.41E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}(max)$ (dynes/cm <sup>2</sup> )	SD
120.00	439.19		3248.40					4.53E+06				
130.00	456.07		3519.10					4.70E+06				
150.00	480.23		4060.50					4.95E+06				
180.00	491.10		4872.60					5.06E+06				
200.00	504.94		5414.00					5.20E+06				
240.00	516.10		6496.80					5.32E+06				
280.00	531.79		7579.60					5.48E+06				

2. Data of the wall shear stress, the apparent strain rate of MDPE (M3204RU)

Die no.614 ( $d_c = 0.7525$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $190$  °C . (Figure 3.3)

Velocity (mm/min)	Load (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}$ (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}$ (dynes/cm <sup>2</sup> )	SD
0.20	11.56	5.41					1.19E+04				
0.50	18.92	13.54					1.95E+05				
1.00	35.19	27.07					3.63E+05				
3.00	77.38	81.21					7.97E+05				
5.00	82.37	135.35					8.49E+05				
10.00	136.50	270.70					1.41E+06				
13.00	183.09	351.91					1.89E+06				
17.00	207.61	460.19	789.00	850.20	699.80	75.63	2.14E+06	2.87E+06	3.45E+06	2.82.E+06	3.50E+05
20.00	223.43	541.40					2.30E+06				
23.00	237.53	622.61					2.45E+06				
27.00	254.44	730.89					2.62E+06				
30.00	265.38	812.10					2.73E+06				
37.00	288.95	1001.59					2.98E+06				
43.00	301.45	1164.01					3.11E+06				
47.00	314.02	1272.29					3.24E+06				



Velocity (mm/min)	Load (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}$ (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}$ (dynes/cm <sup>2</sup> )	SD
50.00	319.94	1353.50					3.30E+06				
53.00	326.62	1434.71					3.37E+06				
57.00	334.42	1542.99					3.45E+06				
60.00	341.17	1624.20					3.52E+06				
70.00	360.01	1894.90					3.71E+06				
90.00	377.73	2436.30	2420.00	2430.00	2428.77	8.22	3.89E+06	3.63E+06	3.90E+06	3.81.E+06	1.54E+05
100.00	386.03	2707.00					3.98E+06				
150.00	398.85	4060.50					4.11E+06				
200.00	436.71	5414.00					4.50E+06				
230.00	461.42	6226.10					4.76E+06				
250.00	477.51	6767.50					4.92E+06				
260.00	480.60	7038.20	7040.00	7030.00	7036.07	5.33	4.95E+06	5.00E+06	4.87E+06	4.94.E+06	6.58E+04
304.00	489.92	8229.28					5.05E+06				

3. Data of the wall shear stress, the apparent strain rate of LLDPE (L2020F)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $150$  °C .

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(ave.)}$ (1/sec)	SD	$\tau_{w1}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(ave.)}(\max)$ (dynes/cm <sup>2</sup> )	SD
0.20	15.64		5.41					1.64E+05				
0.50	46.36		13.54					4.88E+05				
1.40	96.23		37.90					1.01E+06				
2.60	138.96		70.38					1.46E+06				
3.80	170.51		102.87					1.79E+06				
4.60	178.48		124.52					1.88E+06				
5.80	206.41		157.01					2.17E+06				
8.00	229.41		216.56					2.41E+06				
10.00	257.75		270.70	235.00	251.00	253.00	18.04	2.71E+06	1.93E+06	2.30E+06	2.32E+06	3.90E+05
12.00	275.33		324.84					2.90E+06				
15.00	299.68		406.05					3.15E+06				
20.00	310.87		541.40					3.27E+06				
23.00	345.96		622.61					3.64E+06				
27.00	367.82		730.89					3.87E+06				
30.00	377.51		812.10					3.97E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w2(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w3(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.) (max)}$ (dynes/cm <sup>2</sup> )	SD
33.00	383.45		893.31					4.03E+06				
37.00	392.65		1001.59					4.13E+06				
43.00	402.00		1164.01					4.23E+06				
47.00	405.00	386.74	1272.29	1368.00	1318.00	1320.00	48.01	4.26E+06	1.95E+06	2.43E+06	2.88E+06	1.22E+06
50.00	425.83	391.81	1353.50					4.48E+06				
60.00	433.46	400.82	1624.20					4.56E+06				
70.00	450.87	412.46	1894.90					4.74E+06				
80.00	470.89		2165.60	1850.00	2014.00	2010.00	158.04	4.95E+06	3.09E+06	3.98E+06	4.02E+06	9.30E+05
90.00	487.23		2436.30					5.12E+06				
100.00	501.49		2707.00					5.27E+06				
150.00	515.25		4060.50					5.42E+06				
170.00	523.75		4601.90					5.51E+06				
200.00	547.85		5414.00					5.76E+06				
230.00	589.95		6226.10					6.20E+06				
250.00	610.25		6767.50					6.42E+06				

4. Data of the wall shear stress, the apparent strain rate of LLDPE (L2020F)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $170$  °C .

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}$ (max) (dynes/cm <sup>2</sup> )	SD
0.20	23.56		5.41					2.48E+05				
0.50	25.17		13.54					2.65E+05				
1.00	83.41		27.07					8.77E+05				
3.00	175.99		81.21					1.85E+06				
5.00	227.24		135.35					2.39E+06				
7.00	262.73		189.49					2.76E+06				
10.00	301.92		270.70					3.17E+06				
13.00	331.29		351.91					3.48E+06				
17.00	334.36		460.19					3.52E+06				
20.00	351.34		541.40	500.00	518.00	520.00	20.55	3.69E+06	1.93E+06	2.78E+06	2.81.E+06	8.80E+05
23.00	356.10		622.61					3.74E+06				
27.00	357.26		730.89					3.76E+06				
30.00	362.40		812.10					3.81E+06				
33.00	375.50		893.31					3.95E+06				
37.00	380.40		1001.59					4.00E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}(\text{max})$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(\text{max})$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(\text{max})$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}(\text{max})$ (dynes/cm <sup>2</sup> )	SD
40.00	385.70		1082.80					4.06E+06				
43.00	388.60		1164.01					4.09E+06				
47.00	390.50		1272.29					4.11E+06				
50.00	396.70	366.40	1353.50	2293.00	1815.00	1821.00	469.53	4.17E+06	4.63E+06	4.37E+06	4.40E+06	2.31E+05
60.00	400.50	374.50	1624.20					4.21E+06				
70.00	410.50	381.60	1894.90					4.32E+06				
80.00	415.80	396.70	2165.60					4.37E+06				
90.00	422.70	399.40	2436.30					4.45E+06				
140.00	437.80		3789.80	6941.00	5525.00	5418.66	1578.19	4.60E+06	5.30E+06	4.40E+06	4.80E+06	4.73E+05
150.00	450.80		4060.50					4.74E+06				
170.00	460.70		4601.90					4.84E+06				
200.00	500.86		5414.00					5.27E+06				
230.00	578.86		6226.10					6.09E+06				
250.00	600.87		6767.50					6.32E+06				

5. Data of the wall shear stress, the apparent strain rate of LLDPE( L2020F)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $190$  °C . (Figure 3.2)

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}(max)$ (dynes/cm <sup>2</sup> )	SD
0.10	12.82		2.71					1.32E+05				
0.50	17.34		13.54					1.79E+05				
1.50	55.80		40.61					5.75E+05				
5.00	139.12		135.35					1.43E+06				
6.00	159.16		162.42					1.64E+06				
7.00	186.39		189.49					1.92E+06				
8.00	172.08		216.56					2.04E+06				
9.00	207.48		243.63					2.14E+06				
11.00	221.63		297.77					2.28E+06				
12.00	235.78		324.84	309.00	333.00	322.28	12.20	2.43E+06	2.29E+06	2.81E+06	2.51.E+06	2.69E+05
13.00	245.13		351.91					2.53E+06				
15.00	261.87		406.05					2.70E+06				
20.00	294.83		541.40					3.04E+06				
23.00	309.64		622.61					3.19E+06				
25.00	314.02		676.75					3.24E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}$ (max) (dynes/cm <sup>2</sup> )	SD
40.00	335.65		1082.80					3.46E+06				
60.00	388.23		1624.20					4.00E+06				
65.00	381.37	378.68	1759.55	1730.00	1780.00	1756.52	25.14	4.06E+06	3.89E+06	3.87E+06	3.94.E+06	1.04E+05
70.00	396.12	379.84	1894.90					4.08E+06				
75.00	399.17	381.67	2030.25					4.11E+06				
85.00	400.85	382.52	2300.95					4.13E+06				
90.00	404.46	384.23	2436.30					4.17E+06				
93.00	404.74	386.45	2517.51					4.17E+06				
95.00	407.43	388.55	2571.65					4.20E+06				
97.00	407.69	391.58	2625.79					4.20E+06				
99.00	412.63	395.24	2679.93					4.25E+06				
100.00	394.76		2707.00					4.27E+06				
103.00	416.27		2788.21					4.29E+06				
105.00	417.22		2842.35					4.30E+06				
111.00	417.24		3004.77					4.30E+06				
113.00	417.49		3058.91					4.30E+06				
115.00	419.71		3113.05					4.33E+06				
117.00	423.35		3167.19					4.36E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}$ (max) (dynes/cm <sup>2</sup> )	SD
119.00	427.07		3221.33					4.40E+06				
120.00	427.09		3248.40					4.40E+06				
127.00	429.29		3437.89					4.42E+06				
129.00	431.35		3492.03					4.45E+06				
130.00	436.50		3519.10					4.50E+06				
131.00	428.89		3546.17	3520.00	3500.00	3522.06	23.15	4.42E+06	4.53E+06	4.66E+06	4.54E+06	1.20E+05
133.00	442.91		3600.31					4.56E+06				
135.00	445.55		3654.45					4.59E+06				
137.00	448.31		3708.59					4.62E+06				
139.00	450.49		3762.73					4.64E+06				
150.00	451.94		4060.50					4.66E+06				
170.00	474.53		4601.90					4.89E+06				
200.00	500.20		5414.00					5.15E+06				
220.00	517.15		5955.40					5.33E+06				
240.00	530.40		6496.80					5.47E+06				
260.00	536.02		7038.20					5.52E+06				



6. Data of the wall shear stress, the apparent strain rate of LLDPE (L2020F)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $210$  °C .

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}$ (max) (dynes/cm <sup>2</sup> )	SD
0.20	13.15		5.41					1.38E+05				
0.50	40.82		13.54					4.29E+05				
2.40	84.70		64.97					8.91E+05				
3.80	115.42		102.87					1.21E+06				
4.80	131.36		129.94					1.38E+06				
6.40	154.61		173.25					1.63E+06				
8.00	164.54		216.56					1.73E+06				
10.00	192.74		270.70					2.03E+06				
12.00	210.19		324.84					2.21E+06				
15.00	217.66		406.05	428.00	420.00	417.00	11.14	2.29E+06	3.31E+06	2.67E+06	2.75.E+06	5.15E+05
22.00	270.93		595.54					2.85E+06				
40.00	291.37		1082.80					3.06E+06				
43.00	349.10		1164.01					3.67E+06				
47.00	361.42		1272.29					3.80E+06				
50.00	368.87		1353.50					3.88E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}(max)$ (dynes/cm <sup>2</sup> )	SD
53.00	375.55		1434.71					3.95E+06				
57.00	384.46		1542.99					4.04E+06				
60.00	389.79		1624.20					4.10E+06				
65.00	398.99	295.40	1759.55	1820.00	1788.00	1790.00	30.02	4.20E+06	4.58E+06	3.82E+06	4.20E+06	3.80E+05
70.00	405.88	297.12	1894.90					4.27E+06				
100.00	413.47	301.45	2707.00					4.35E+06				
150.00	429.52	305.78	4060.50					4.52E+06				
200.00	470.90		5414.00	4138.00	4788.00	4780.00	638.04	4.95E+06	4.39E+06	4.65E+06	4.67E+06	2.80E+05
230.00	495.12		6226.10					5.21E+06				
250.00	508.84		6767.50					5.35E+06				

7. Data of the wall shear stress, the apparent strain rate of LLDPE (L2020F)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $230$  °C .

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}$ (max) (dynes/cm <sup>2</sup> )	SD
0.50	15.95		13.54					1.68E+05				
1.20	36.02		32.48					3.79E+05				
3.00	71.58		81.21					7.53E+05				
5.00	99.94		135.35					1.05E+06				
7.00	117.62		189.49					1.24E+06				
10.00	137.17		270.70					1.44E+06				
13.00	158.94		351.91					1.67E+06				
17.00	194.79		460.19					2.05E+06				
20.00	208.86		541.40	500.00	518.00	520.00	20.55	2.20E+06	2.72E+06	3.51E+06	2.81E+06	6.60E+05
23.00	225.71		622.61					2.37E+06				
27.00	242.71		730.89					2.55E+06				
30.00	253.97		812.10					2.67E+06				
33.00	264.54		893.31					2.78E+06				
37.00	276.87		1001.59					2.91E+06				
40.00	260.23		1082.80					2.74E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w2(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w3(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)(max)}$ (dynes/cm <sup>2</sup> )	SD
43.00	294.54		1164.01					3.10E+06				
47.00	303.74		1272.29					3.19E+06				
50.00	310.25		1353.50					3.26E+06				
53.00	317.34		1434.71					3.34E+06				
57.00	325.51		1542.99					3.42E+06				
60.00	331.12	265.40	1624.20	2022.00	1815.00	1821.00	199.05	3.48E+06	5.52E+06	4.20E+06	4.40E+06	1.03E+06
65.00	341.08	267.50	1759.55					3.59E+06				
70.00	350.19	270.40	1894.90					3.68E+06				
100.00	394.71	274.30	2707.00					4.15E+06				
150.00	428.60	280.40	4060.50					4.51E+06				
200.00	433.33		5414.00	5454.00	5392.00	5420.00	31.43	4.56E+06	5.13E+06	4.71E+06	4.80E+06	2.95E+05
230.00	458.46		6226.10					4.82E+06				
250.00	474.03		6767.50					4.98E+06				

8. Data of the wall shear stress, the apparent strain rate of HDPE (H6205JU)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $190$  °C . (Figure 3.6)

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}$ (max) (dynes/cm <sup>2</sup> )	SD
0.20	1.14		5.41					1.20E+05				
0.50	1.44		13.53					1.52E+05				
1.00	2.74		27.07					2.88E+05				
3.00	5.65		81.21					5.95E+05				
5.00	8.00		135.35					8.41E+05				
7.00	9.80		189.49					1.03E+06				
10.00	12.17		270.70					1.28E+06				
13.00	14.07		351.91					1.48E+06				
17.00	16.07		460.19					1.69E+06				
20.00	17.50		541.40					1.84E+06				
23.00	18.73		622.61					1.97E+06				
27.00	20.25		730.89					2.13E+06				
29.00	21.20		785.03	526.00	553.00	622.00	142.38	2.23E+06	2.95E+06	3.71E+06	2.97E+06	7.40E+05
33.00	22.25		893.31					2.34E+06				
37.00	23.30		1001.59					2.45E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}(\max)$ (dynes/cm <sup>2</sup> )	SD
43.00	24.72		1164.01					2.60E+06				
47.00	25.67		1272.29					2.70E+06				
50.00	26.24		1353.50					2.76E+06				
53.00	26.72		1434.71					2.81E+06				
57.00	27.39		1542.99					2.88E+06				
60.00	27.96		1642.20					2.94E+06				
65.00	28.81		1759.55					3.03E+06				
70.00	29.57		1894.90					3.11E+06				
100.00	33.57		2707.00					3.53E+06				
150.00	37.08	35.18	4060.50	4195.85	3925.15	4060.00	135.43	3.90E+06	3.89E+06	3.91E+06	3.90E+06	1.00E+04
200.00	38.42	36.32	5414.00					4.04E+06				
230.00	41.65	37.18	6226.10					4.38E+06				
250.00	44.50	38.99	6767.50					4.68E+06				

9. Data of the wall shear stress, the apparent strain rate of HDPE (H5690S)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $150$  °C .

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(\max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}(\max)$ (dynes/cm <sup>2</sup> )	SD
0.20	48.00		5.41					5.05E+05				
0.50	105.50		13.53					1.12E+06				
1.00	145.50		27.07					1.53E+06				
2.00	205.40		54.14					2.16E+06				
2.60	206.59	138.80	70.38	61.00	78.50	70.00	8.75	2.16E+06	6.00E+05	4.00E+05	1.12E+06	9.60E+05
3.00	230.10	141.70	81.21					2.42E+06				
4.00	233.00	143.50	108.28					2.45E+06				
5.00	234.90	146.40	135.35					2.47E+06				
6.00	257.70	156.90	162.42					2.71E+06				
7.00	265.30	162.60	189.49					2.79E+06				
10.00	272.00	167.40	270.70					2.86E+06				
13.00	197.70		351.91	378.98	324.84	351.00	27.07	2.08E+06	2.12E+06	2.04E+06	2.08E+06	4.00E+04
17.00	265.30		460.19					2.79E+06				
20.00	290.00		541.40					3.05E+06				
23.00	326.20		622.61					3.43E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(\text{avg.})}$ (1/sec)	SD	$\tau_{w1}(\text{max})$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(\text{max})$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(\text{max})$ (dynes/cm <sup>2</sup> )	$\tau_{w(\text{avg.})}(\text{max})$ (dynes/cm <sup>2</sup> )	SD
27.00	369.00		730.89					3.88E+06				
30.00	394.60		812.10					4.15E+06				
33.00	433.60		893.31					4.56E+06				
37.00	446.00		1001.59					4.69E+06				
43.00	458.30		1164.01					4.82E+06				
47.00	466.90		1272.29					4.91E+06				
50.00	520.10		1353.50					5.47E+06				
53.00	591.50		1434.71					6.22E+06				
70.00	651.50		1894.90					6.85E+06				
73.00	700.00		1976.11	839.17	785.03	1200.01	672.52	7.36E+06	2.17E+06	3.04E+06	2.16E+06	2.78E+06
150.00	843.50		4060.50					8.87E+06				
200.00	916.70		5414.00					9.64E+06				
230.00	930.90		6226.10					9.79E+06				
250.00	960.40		6767.50					1.01E+07				



10. Data of the wall shear stress, the apparent strain rate of HDPE (H5690S)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $170$  °C .

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}(max)$ (dynes/cm <sup>2</sup> )	SD
0.20	24.20		5.41					2.55E+05				
0.50	59.90		13.53					6.30E+05				
1.00	110.30		27.07					1.16E+06				
2.00	178.80		54.14					1.88E+06				
3.00	205.40		81.21	90.00	71.00	81.00	9.50	2.16E+06	2.41E+06	2.27E+06	2.28E+06	1.25E+05
4.00	217.80		108.28					2.29E+06				
5.00	227.30		135.35					2.39E+06				
6.00	230.10		162.42					2.42E+06				
7.00	240.00	216.80	189.49	665.00	430.00	427.00	238.01	2.53E+06	2.44E+06	2.28E+06	2.42E+06	1.27E+05
10.00	245.30	218.70	270.70					2.58E+06				
13.00	252.90	221.60	351.91					2.66E+06				
17.00	270.00	228.20	460.19					2.84E+06				
20.00	286.20	232.00	541.40					3.01E+06				
23.00	296.70	236.70	622.61					3.12E+06				
27.00	307.10	239.60	730.89					3.23E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w2(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w3(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}(max)$ (dynes/cm <sup>2</sup> )	SD
30.00	315.70	243.40	812.10					3.32E+06				
40.00	352.80	347.20	1082.80					3.71E+06				
50.00	261.50		1353.50	1450.00	1256.00	1353.00	97.00	2.75E+06	2.80E+06	2.69E+06	2.75.E+06	2.87E+05
60.00	282.40		1624.20					2.97E+06				
70.00	296.70		1894.90					3.12E+06				
100.00	368.00		2707.00					3.87E+06				
150.00	564.80		4060.50					5.94E+06				
200.00	817.80		5414.00					8.60E+06				
230.00	946.20		6226.10					9.95E+06				

11. Data of the wall shear stress, the apparent strain rate of HDPE (H5690S)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $190$  °C . (Figure 3.4)

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}$ (max) (dynes/cm <sup>2</sup> )	SD
0.20	21.30		5.41					2.24E+05				
0.50	24.75		13.54					2.60E+05				
1.00	57.49		27.07					6.05E+05				
2.50	108.76		67.68	98.32	82.40	83.00	15.32	1.14E+06	3.45E+06	2.35E+06	2.31E+06	1.15E+06
4.00	141.96		108.28					1.49E+06				
6.00	174.18		162.42					1.83E+06				
7.00	188.00		189.49					1.98E+06				
10.00	225.03		270.70					2.37E+06				
13.00	249.34		351.91					2.62E+06				
17.00	277.96		460.19					2.92E+06				
20.00	295.96		541.40					3.11E+06				
23.00	302.56		622.61					3.18E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{u(avg.)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}$ (max) (dynes/cm <sup>2</sup> )	SD
24.00	357.00	305.62	649.68	328.60	403.20	459.00	168.21	3.61E+06	3.42E+06	3.53E+06	3.51E+06	9.54E+04
33.00	420.00	385.30	893.31					4.42E+06				
37.00	498.78	402.69	1001.59					5.25E+06				
43.00	512.60	406.20	1164.01					5.39E+06				
47.00	524.36	425.00	1272.29					5.51E+06				
50.00	567.30	434.60	1353.50					5.97E+06				
70.00	598.13	447.00	1894.90					6.29E+06				
73.00	600.30		1976.11	3438.50	2713.50	2707.00	735.78	6.30E+06	3.50E+06	3.62E+06	4.47E+06	1.58E+06
150.00	648.90		4060.50					6.82E+06				
200.00	679.30		5414.00					7.14E+06				
230.00	723.40		6226.10					7.61E+06				
250.00	779.10		6767.50					8.19E+06				

12. Data of the wall shear stress, the apparent strain rate of HDPE (H5690S)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at 210 °C .

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}$ (max) (dynes/cm <sup>2</sup> )	SD
0.20	22.20		5.41					2.34E+05				
0.50	41.20		13.53					4.33E+05				
1.00	76.70		27.07					8.07E+05				
3.00	159.70		81.21					1.68E+06				
5.00	211.10		135.35					2.22E+06				
7.00	248.10		189.49	196.00	182.00	189.00	7.00	2.61E+06	3.51E+06	1.71E+06	2.61E+06	9.00E+05
10.00	287.10		270.70					3.02E+06				
13.00	315.70		351.91					3.32E+06				
17.00	342.30		460.19					3.60E+06				
20.00	355.60		541.40					3.74E+06				
23.00	364.20	294.70	622.61	460.00	542.00	541.00	81.50	3.83E+06	3.65E+06	3.70E+06	3.74E+06	9.29E+04
27.00	367.10	294.80	730.89					3.86E+06				
30.00	374.70	295.70	812.10					3.94E+06				
33.00	375.60	295.70	893.31					3.95E+06				
37.00	378.40	295.70	1001.59					3.98E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w2(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w3(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}(max)$ (dynes/cm <sup>2</sup> )	SD
50.00	382.30	307.10	1353.50					4.02E+06				
60.00	389.90	313.80	1624.20					4.10E+06				
70.00	400.30	318.50	1894.90					4.21E+06				
100.00	409.80	333.80	2707.00					4.31E+06				
150.00	419.40	374.70	4060.50					4.41E+06				
200.00	443.10		5414.00	2706.00	4058.00	4060.00	1354.00	4.66E+06	3.20E+06	3.95E+06	3.93E+06	7.30E+05
230.00	480.20		6226.10					5.05E+06				
250.00	506.80		6767.50					5.33E+06				

13. Data of the wall shear stress, the apparent strain rate of HDPE (H5690S)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at 230 °C .

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w2(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w3(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)(max)}$ (dynes/cm <sup>2</sup> )	SD
0.20	15.60		5.41					1.64E+05				
0.50	29.50		13.53					3.10E+05				
1.00	63.30		27.07					6.66E+05				
3.00	135.00		81.21					1.42E+06				
5.00	180.70		135.35					1.90E+06				
7.00	214.90		189.49					2.26E+06				
10.00	252.00		270.70	265.00	275.00	270.00	5.03	2.65E+06	2.71E+06	2.61E+06	2.65.E+06	5.03E+04
13.00	281.50		351.91					2.96E+06				
17.00	319.50		460.19					3.36E+06				
20.00	358.50		541.40					3.77E+06				
23.00	371.80		622.61					3.91E+06				
27.00	385.10	331.80	730.89	513.00	620.00	622.00	109.00	4.05E+06	3.77E+06	3.93E+06	3.91E+06	1.40E+05
30.00	392.70	334.70	812.10					4.13E+06				
40.00	395.60	340.40	1082.80					4.16E+06				
43.00	396.50	341.40	1164.01					4.17E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}(max)$ (dynes/cm <sup>2</sup> )	SD
47.00	398.40	343.30	1272.29					4.19E+06				
50.00	401.30	343.30	1353.50					4.22E+06				
53.00	404.10	343.30	1434.71					4.25E+06				
57.00	405.10	343.20	1542.99					4.26E+06				
60.00	408.90	344.20	1624.20					4.30E+06				
65.00	410.80	346.10	1759.55					4.32E+06				
70.00	419.40	351.80	1894.90					4.41E+06				
100.00	429.80	372.70	2707.00					4.52E+06				
150.00	373.70		4060.50	6767.00	5441.00	5414.00	1353.09	3.93E+06	5.39E+06	4.66E+06	4.66E+06	7.30E+05
200.00	407.90		5414.00					4.29E+06				
230.00	434.60		6226.10					4.52E+06				
250.00	453.60		6767.50					4.77E+06				



14. Data of the wall shear stress, the apparent strain rate of HDPE (H5604F)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $190$  °C . (Figure 3.5)

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w2(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w3(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)(max)}$ (dynes/cm <sup>2</sup> )	SD
0.20	18.16		5.41					1.91E+05				
0.50	55.05		13.54					5.79E+05				
1.00	110.31		27.07	25.13	29.30	27.00	2.09	1.16E+06	1.18E+06	1.15E+06	1.16E+06	1.53E+04
3.00	171.17		81.21					1.80E+06				
5.00	191.13		135.35					2.01E+06				
7.00	202.54		189.00					2.13E+06				
8.00	222.54	198.70	216.56	180.00	172.00	189.00	24.01	2.34E+06	2.12E+06	1.95E+06	2.13.E+06	1.96E+05
13.00	226.32	201.60	352.00					2.38E+06				
17.00	230.12	205.40	460.00					2.42E+06				
20.00	232.97	206.35	541.40					2.45E+06				
23.00	235.83	213.01	622.61					2.48E+06				
31.00	244.39	223.47	839.10	947.45	893.00	893.00	54.23	2.57E+06	2.59E+06	2.60E+06	2.59E+06	1.53E+04
33.00	246.29		893.31					2.59E+06				
37.00	260.55		1001.59					2.74E+06				
43.00	274.82		1164.01					2.89E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg)}$ (1/sec)	SD	$\tau_{w1}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w2}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w3}$ (max) (dynes/cm <sup>2</sup> )	$\tau_{w(avg)}$ (max) (dynes/cm <sup>2</sup> )	SD
47.00	286.23		1272.29					3.01E+06				
50.00	292.89		1353.50					3.08E+06				
53.00	301.44		1434.71					3.17E+06				
57.00	318.56		1542.99					3.35E+06				
60.00	327.12		1642.20					3.44E+06				
65.00	345.19		1759.55					3.63E+06				
70.00	366.11		1894.90					3.85E+06				
100.00	436.48		2707.00					4.59E+06				
150.00	532.52		4060.50					5.60E+06				
200.00	685.62		5414.00					7.21E+06				
230.00	809.24		6226.10					8.51E+06				
250.00	833.97		6767.50					8.77E+06				

14. Data of the wall shear stress, the apparent strain rate of HDPE (H5604F)

Die No.614 ( $d_c = 0.725$  mm,  $l_c = 25.105$  mm,  $l_c/d_c = 33.4$ ) at  $190$  °C . (Figure 3.5)

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w2}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w3}(max)$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)}(max)$ (dynes/cm <sup>2</sup> )	SD
0.20	18.16		5.41					1.91E+05				
0.50	55.05		13.54					5.79E+05				
1.00	110.31		27.07	25.13	29.30	27.00	2.09	1.16E+06	1.18E+06	1.15E+06	1.16E+06	1.53E+04
3.00	171.17		81.21					1.80E+06				
5.00	191.13		135.35					2.01E+06				
7.00	202.54		189.00					2.13E+06				
8.00	222.54	198.70	216.56	180.00	172.00	189.00	24.01	2.34E+06	2.12E+06	1.95E+06	2.13.E+06	1.96E+05
13.00	226.32	201.60	352.00					2.38E+06				
17.00	230.12	205.40	460.00					2.42E+06				
20.00	232.97	206.35	541.40					2.45E+06				
23.00	235.83	213.01	622.61					2.48E+06				
31.00	244.39	223.47	839.10	947.45	893.00	893.00	54.23	2.57E+06	2.59E+06	2.60E+06	2.59E+06	1.53E+04
33.00	246.29		893.31					2.59E+06				
37.00	260.55		1001.59					2.74E+06				
43.00	274.82		1164.01					2.89E+06				

Velocity (mm/min)	Load (max) (kg)	Load (min) (kg)	$\gamma_{a1}$ (1/sec)	$\gamma_{a2}$ (1/sec)	$\gamma_{a3}$ (1/sec)	$\gamma_{a(avg.)}$ (1/sec)	SD	$\tau_{w1(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w2(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w3(max)}$ (dynes/cm <sup>2</sup> )	$\tau_{w(avg.)(max)}$ (dynes/cm <sup>2</sup> )	SD
47.00	286.23		1272.29					3.01E+06				
50.00	292.89		1353.50					3.08E+06				
53.00	301.44		1434.71					3.17E+06				
57.00	318.56		1542.99					3.35E+06				
60.00	327.12		1642.20					3.44E+06				
65.00	345.19		1759.55					3.63E+06				
70.00	366.11		1894.90					3.85E+06				
100.00	436.48		2707.00					4.59E+06				
150.00	532.52		4060.50					5.60E+06				
200.00	685.62		5414.00					7.21E+06				
230.00	809.24		6226.10					8.51E+06				
250.00	833.97		6767.50					8.77E+06				

15. Data of parallel plate for L2009F at frequency 1.0 rad/s,  
strain rate varied from 0.01-100 s<sup>-1</sup>  
point per decade set at 7 and the gap size was 0.6 mm. (Figures 3.11,3.17)

Temperature (°C)	$\omega$ (rad/s)	G' (dynes/cm <sup>2</sup> )	G'' (dynes/cm <sup>2</sup> )	temperature (°C)	$\omega$ (rad/s)	G' (dynes/cm <sup>2</sup> )	G'' (dynes/cm <sup>2</sup> )
230	0.01	2.07E+04	7.23E+03	210	3.98	1.53E+05	1.16E+05
230	0.02	4.25E+04	7.55E+03	210	6.31	1.82E+05	1.63E+05
230	0.03	5.37E+04	7.55E+03	210	10.00	2.24E+05	2.23E+05
230	0.04	5.98E+04	4.59E+03	210	15.85	2.84E+05	3.00E+05
230	0.06	6.47E+04	3.88E+03	210	25.12	3.69E+05	3.95E+05
230	0.10	6.78E+04	4.55E+03	210	39.81	4.86E+05	5.08E+05
230	0.16	7.10E+04	6.80E+03	210	63.10	6.46E+05	6.41E+05
230	0.25	7.43E+04	1.21E+04	210	100.00	8.65E+05	7.94E+05
230	0.40	7.65E+04	1.70E+04	190	0.01	9.31E+04	4.28E+03
230	0.63	7.95E+04	2.46E+04	190	0.02	9.88E+04	3.69E+03
230	1.00	8.36E+04	3.56E+04	190	0.03	1.03E+05	3.57E+03
230	1.58	8.99E+04	5.15E+04	190	0.04	1.05E+05	3.92E+03
230	2.51	9.97E+04	7.41E+04	190	0.06	1.08E+05	5.19E+03
230	3.98	1.15E+05	1.05E+05	190	0.10	1.10E+05	8.86E+03
230	6.31	1.38E+05	1.48E+05	190	0.16	1.12E+05	1.22E+04
230	10.00	1.73E+05	2.03E+05	190	0.25	1.14E+05	1.71E+04
230	15.85	2.25E+05	2.75E+05	190	0.40	1.17E+05	2.46E+04
230	25.12	2.99E+05	3.66E+05	190	0.63	1.21E+05	3.52E+04
230	39.81	4.03E+05	4.76E+05	190	1.00	1.27E+05	5.06E+04
230	63.10	5.46E+05	6.09E+05	190	1.58	1.37E+05	7.21E+04
230	100.00	7.46E+05	7.65E+05	190	2.51	1.52E+05	1.02E+05
210	0.01	7.26E+04	5.19E+03	190	3.98	1.75E+05	1.42E+05
210	0.02	8.26E+04	5.20E+03	190	6.31	2.09E+05	1.94E+05
210	0.03	8.83E+04	3.27E+03	190	10.00	2.60E+05	2.60E+05
210	0.04	9.32E+04	4.64E+03	190	15.85	3.30E+05	3.44E+05
210	0.06	9.59E+04	4.17E+03	190	25.12	4.28E+05	4.45E+05
210	0.10	9.78E+04	4.72E+03	190	39.81	5.61E+05	5.65E+05
210	0.16	9.97E+04	7.07E+03	190	63.10	7.40E+05	7.02E+05
210	0.25	1.02E+05	1.09E+04	190	100.00	9.83E+05	8.55E+05
210	0.40	1.04E+05	1.67E+04	170	0.01	9.27E+04	2.54E+03
210	0.63	1.08E+05	2.53E+04	170	0.02	9.58E+04	2.68E+03
210	1.00	1.13E+05	3.79E+04	170	0.03	9.82E+04	3.28E+03
210	1.58	1.22E+05	5.60E+04	170	0.04	1.00E+05	5.14E+03
210	2.51	1.34E+05	8.13E+04	170	0.06	9.89E+04	5.70E+03

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
170	0.10	1.00E+05	7.96E+03	130	0.02	7.05E+04	2.11E+03
170	0.16	1.02E+05	1.18E+04	130	0.03	7.15E+04	3.30E+03
170	0.25	1.04E+05	1.77E+04	130	0.04	7.26E+04	5.29E+03
170	0.40	1.08E+05	2.63E+04	130	0.06	7.40E+04	8.23E+03
170	0.63	1.13E+05	3.86E+04	130	0.10	7.58E+04	1.26E+04
170	1.00	1.21E+05	5.60E+04	130	0.16	7.86E+04	1.88E+04
170	1.58	1.34E+05	8.00E+04	130	0.25	8.25E+04	2.79E+04
170	2.51	1.52E+05	1.12E+05	130	0.40	8.85E+04	4.06E+04
170	3.98	1.80E+05	1.55E+05	130	0.63	9.77E+04	5.82E+04
170	6.31	2.21E+05	2.10E+05	130	1.00	1.11E+05	8.21E+04
170	10.00	2.78E+05	2.79E+05	130	1.58	1.32E+05	1.14E+05
170	15.85	3.58E+05	3.63E+05	130	2.51	1.61E+05	1.54E+05
170	25.12	4.66E+05	4.63E+05	130	3.98	2.03E+05	2.06E+05
170	39.81	6.09E+05	5.78E+05	130	6.31	2.62E+05	2.69E+05
170	63.10	7.99E+05	7.06E+05	130	10.00	3.41E+05	3.43E+05
170	100.00	1.05E+06	8.42E+05	130	15.85	4.46E+05	4.28E+05
150	0.01	8.24E+04	1.68E+03	130	25.12	5.81E+05	5.23E+05
150	0.02	8.38E+04	1.94E+03	130	39.81	7.53E+05	6.25E+05
150	0.03	8.51E+04	2.75E+03	130	63.10	9.72E+05	7.29E+05
150	0.04	8.63E+04	4.22E+03	130	100.00	1.25E+06	8.22E+05
150	0.06	8.76E+04	6.45E+03	120	0.01	6.94E+04	6.32E+05
150	0.10	8.91E+04	9.86E+03	120	0.02	8.63E+04	6.70E+05
150	0.16	9.12E+04	1.48E+04	120	0.03	1.80E+05	7.08E+05
150	0.25	9.43E+04	2.21E+04	120	0.04	3.18E+05	7.46E+05
150	0.40	9.87E+04	3.26E+04	120	0.06	4.33E+05	7.84E+05
150	0.63	1.06E+05	4.73E+04	120	0.10	5.56E+05	8.23E+05
150	1.00	1.16E+05	6.77E+04	120	0.16	7.09E+05	8.61E+05
150	1.58	1.32E+05	9.54E+04	120	0.25	8.87E+05	8.99E+05
150	2.51	1.55E+05	1.32E+05	120	0.40	1.11E+06	1.09E+06
150	3.98	1.89E+05	1.79E+05	120	0.63	1.39E+06	1.39E+06
150	6.31	2.38E+05	2.39E+05	120	1.00	1.76E+06	1.75E+06
150	10.00	3.05E+05	3.11E+05	120	1.58	2.25E+06	2.16E+06
150	15.85	3.97E+05	3.98E+05	120	2.51	2.88E+06	2.70E+06
150	25.12	5.18E+05	4.97E+05	120	3.98	3.72E+06	3.33E+06
150	39.81	6.76E+05	6.09E+05	120	6.31	4.85E+06	3.97E+06
150	63.10	8.82E+05	7.28E+05	120	10.00	6.16E+06	4.64E+06
150	100.00	1.15E+06	8.49E+05	120	15.85	7.88E+06	5.26E+06
130	0.01	6.99E+04	1.60E+03	120	25.12	1.02E+07	5.66E+06

Temperature (°C)	$\omega$ (rad/s)	G (dynes/cm <sup>2</sup> )	G (dynes/cm <sup>2</sup> )	temperature (°C)	$\omega$ (rad/s)	G (dynes/cm <sup>2</sup> )	G (dynes/cm <sup>2</sup> )
120	39.81	1.33E+07	5.31E+06	118	0.63	4.11E+06	3.16E+06
120	63.10	1.70E+07	2.79E+06	118	1.00	4.94E+06	3.86E+06
120	100.00	1.84E+07	0.00E+00	118	1.58	6.08E+06	4.65E+06
118	0.01	1.13E+06	4.79E+05	118	2.51	7.40E+06	5.58E+06
118	0.02	1.36E+06	5.68E+05	118	3.98	9.04E+06	6.55E+06
118	0.03	1.54E+06	7.12E+05	118	6.31	1.11E+07	7.38E+06
118	0.04	1.70E+06	8.77E+05	118	10.00	1.39E+07	8.45E+06
118	0.06	1.89E+06	1.08E+06	118	15.85	1.72E+07	8.58E+06
118	0.10	2.17E+06	1.29E+06	118	25.12	2.17E+07	7.79E+06
118	0.16	2.46E+06	1.66E+06	118	39.81	2.72E+07	3.77E+06
118	0.25	2.89E+06	2.07E+06	118	63.10	2.91E+07	0.00E+00
118	0.40	3.43E+06	2.59E+06	118	100.00	2.10E+07	0.00E+00

16. Data of parallel plate for L2020F at frequency 1.0 rad/s,  
strain rate varied from 0.01-100 s<sup>-1</sup>  
point per decade set at 7 and the gap size was 0.6 mm. (Figures 3.12,3.18

Temperature (°C)	$\omega$ (rad/s)	G' (dynes/cm <sup>2</sup> )			G'' (dynes/cm <sup>2</sup> )		
		No.1	No.2	Average	No.1	No.2	Average
230	1.00E-02	6.51E+02	1.06E+04	5.61E+03	6.82E+02	6.15E+03	3.42E+03
230	1.39E-02	9.36E+03	3.21E+04	2.07E+04	3.12E+03	6.33E+03	4.73E+03
230	1.93E-02	3.01E+04	4.42E+04	3.72E+04	4.98E+03	4.59E+03	4.79E+03
230	2.68E-02	4.17E+04	5.12E+04	4.65E+04	4.55E+03	3.92E+03	4.23E+03
230	3.73E-02	5.03E+04	5.63E+04	5.33E+04	4.13E+03	2.61E+03	3.37E+03
230	5.18E-02	5.64E+04	5.95E+04	5.79E+04	3.39E+03	2.51E+03	2.95E+03
230	7.20E-02	6.10E+04	6.13E+04	6.12E+04	3.02E+03	2.43E+03	2.73E+03
230	1.00E-01	6.44E+04	6.29E+04	6.37E+04	2.81E+03	2.11E+03	2.46E+03
230	1.39E-01	6.75E+04	6.40E+04	6.57E+04	2.72E+03	2.54E+03	2.63E+03
230	1.93E-01	6.95E+04	6.53E+04	6.74E+04	2.89E+03	3.27E+03	3.08E+03
230	2.68E-01	7.14E+04	6.63E+04	6.88E+04	3.13E+03	5.04E+03	4.09E+03
230	3.73E-01	7.27E+04	6.74E+04	7.00E+04	3.76E+03	7.00E+03	5.38E+03
230	5.18E-01	7.41E+04	6.90E+04	7.16E+04	4.81E+03	9.88E+03	7.34E+03
230	7.20E-01	7.54E+04	7.15E+04	7.34E+04	6.13E+03	1.37E+04	9.93E+03
230	1.00E+00	7.67E+04	7.48E+04	7.57E+04	7.94E+03	1.94E+04	1.37E+04
230	1.39E+00	7.82E+04	7.95E+04	7.88E+04	1.03E+04	2.73E+04	1.88E+04
230	1.93E+00	7.99E+04	8.67E+04	8.33E+04	1.32E+04	3.75E+04	2.54E+04
230	2.68E+00	8.21E+04	9.70E+04	8.95E+04	1.71E+04	5.12E+04	3.42E+04
230	3.73E+00	8.48E+04	1.12E+05	9.83E+04	2.21E+04	6.83E+04	4.52E+04
230	5.18E+00	8.84E+04	1.32E+05	1.10E+05	2.84E+04	8.96E+04	5.90E+04
230	7.20E+00	9.31E+04	1.62E+05	1.27E+05	3.64E+04	1.16E+05	7.63E+04
210	1.00E-02	7.26E+04	7.47E+04	7.36E+04	6.50E+03	7.59E+03	7.04E+03
210	1.39E-02	8.42E+04	8.26E+04	8.34E+04	5.27E+03	5.53E+03	5.40E+03
210	1.93E-02	9.29E+04	8.77E+04	9.03E+04	4.65E+03	4.64E+03	4.64E+03
210	2.68E-02	9.95E+04	9.14E+04	9.55E+04	4.25E+03	3.78E+03	4.01E+03
210	3.73E-02	1.04E+05	9.44E+04	9.92E+04	3.72E+03	4.42E+03	4.07E+03
210	5.18E-02	1.08E+05	9.25E+04	1.00E+05	3.38E+03	1.80E+03	2.59E+03
210	7.20E-02	1.10E+05	9.22E+04	1.01E+05	3.07E+03	1.43E+03	2.25E+03
210	1.00E-01	1.12E+05	9.23E+04	1.02E+05	3.11E+03	1.16E+03	2.13E+03
210	1.39E-01	1.14E+05	9.29E+04	1.03E+05	3.34E+03	1.40E+03	2.37E+03
210	1.93E-01	1.15E+05	9.27E+04	1.04E+05	3.80E+03	3.12E+03	3.46E+03
210	2.68E-01	1.16E+05	9.42E+04	1.05E+05	4.39E+03	4.31E+03	4.35E+03
210	3.73E-01	1.18E+05	9.48E+04	1.06E+05	5.30E+03	5.98E+03	5.64E+03
210	5.18E-01	1.19E+05	9.64E+04	1.08E+05	6.30E+03	8.77E+03	7.54E+03



Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )			$G''$ (dynes/cm <sup>2</sup> )		
		No.1	No.2	Average	No.1	No.2	Average
210	1.00E+00	1.21E+05	1.02E+05	1.12E+05	9.98E+03	1.78E+04	1.39E+04
210	1.39E+00	1.23E+05	1.07E+05	1.15E+05	1.27E+04	2.47E+04	1.87E+04
210	1.93E+00	1.25E+05	1.14E+05	1.19E+05	1.62E+04	3.36E+04	2.49E+04
210	2.68E+00	1.25E+05	1.23E+05	1.24E+05	2.05E+04	4.54E+04	3.29E+04
210	3.73E+00	1.28E+05	1.37E+05	1.32E+05	2.60E+04	5.98E+04	4.29E+04
210	5.18E+00	1.32E+05	1.56E+05	1.44E+05	3.31E+04	7.77E+04	5.54E+04
210	7.20E+00	1.37E+05	1.82E+05	1.60E+05	4.18E+04	9.93E+04	7.06E+04
190	1.00E-02	1.15E+05	9.35E+04	1.04E+05	6.44E+03	1.46E+03	3.95E+03
190	1.39E-02	1.23E+05	9.25E+04	1.08E+05	5.70E+03	2.16E+03	3.93E+03
190	1.93E-02	1.29E+05	9.41E+04	1.12E+05	5.14E+03	1.83E+03	3.49E+03
190	2.68E-02	1.33E+05	9.44E+04	1.14E+05	4.71E+03	5.97E+02	2.65E+03
190	3.73E-02	1.36E+05	9.47E+04	1.16E+05	4.45E+03	0.00E+00	2.23E+03
190	5.18E-02	1.39E+05	9.51E+04	1.17E+05	4.23E+03	2.07E+02	2.22E+03
190	7.20E-02	1.41E+05	9.61E+04	1.18E+05	4.20E+03	4.41E+02	2.32E+03
190	1.00E-01	1.43E+05	9.66E+04	1.20E+05	4.41E+03	1.03E+03	2.72E+03
190	1.39E-01	1.44E+05	9.71E+04	1.21E+05	4.73E+03	1.27E+03	3.00E+03
190	1.93E-01	1.45E+05	9.87E+04	1.22E+05	5.10E+03	1.89E+03	3.50E+03
190	2.68E-01	1.46E+05	9.87E+04	1.22E+05	5.98E+03	3.56E+03	4.77E+03
190	3.73E-01	1.47E+05	1.00E+05	1.24E+05	7.00E+03	5.69E+03	6.34E+03
190	5.18E-01	1.48E+05	1.02E+05	1.25E+05	8.51E+03	8.38E+03	8.45E+03
190	7.20E-01	1.50E+05	1.04E+05	1.27E+05	1.06E+04	1.24E+04	1.15E+04
190	1.00E+00	1.51E+05	1.08E+05	1.30E+05	1.31E+04	1.80E+04	1.56E+04
190	1.39E+00	1.53E+05	1.13E+05	1.33E+05	1.65E+04	2.51E+04	2.08E+04
190	1.93E+00	1.55E+05	1.21E+05	1.38E+05	2.08E+04	3.43E+04	2.75E+04
190	2.68E+00	1.58E+05	1.32E+05	1.45E+05	2.62E+04	4.57E+04	3.59E+04
190	3.73E+00	1.62E+05	1.47E+05	1.55E+05	3.30E+04	5.97E+04	4.63E+04
190	5.18E+00	1.67E+05	1.68E+05	1.68E+05	4.14E+04	7.70E+04	5.92E+04
190	7.20E+00	1.74E+05	1.95E+05	1.85E+05	5.16E+04	9.70E+04	7.43E+04
170	1.00E-02	1.41E+05	8.91E+04	1.15E+05	5.19E+03	7.60E+03	6.40E+03
170	1.39E-02	1.46E+05	8.75E+04	1.17E+05	4.99E+03	2.52E+04	1.51E+04
170	1.93E-02	1.50E+05	8.37E+04	1.17E+05	4.48E+03	2.31E+03	3.40E+03
170	2.68E-02	1.53E+05	8.29E+04	1.18E+05	4.19E+03	0.00E+00	2.10E+03
170	3.73E-02	1.23E+05	7.74E+04	1.00E+05	2.66E+03	6.77E+03	4.71E+03
170	5.18E-02	1.24E+05	8.66E+04	1.05E+05	1.58E+03	1.69E+03	1.63E+03
170	7.20E-02	1.25E+05	8.18E+04	1.03E+05	1.37E+03	2.12E+03	1.75E+03
170	1.00E-01	1.26E+05	9.03E+04	1.08E+05	1.33E+03	1.04E+04	5.84E+03
170	1.39E-01	1.26E+05	8.26E+04	1.04E+05	1.54E+03	6.24E+03	3.89E+03
170	1.93E-01	1.27E+05	8.39E+04	1.06E+05	1.92E+03	7.53E+02	1.34E+03

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )			$G''$ (dynes/cm <sup>2</sup> )		
		No.1	No.2	Average	No.1	No.2	Average
170	3.73E-01	1.29E+05	8.35E+04	1.06E+05	3.77E+03	8.22E+03	6.00E+03
170	5.18E-01	1.30E+05	8.63E+04	1.08E+05	5.31E+03	1.07E+04	8.02E+03
170	7.20E-01	1.31E+05	8.92E+04	1.10E+05	7.41E+03	1.50E+04	1.12E+04
170	1.00E+00	1.33E+05	9.26E+04	1.13E+05	1.00E+04	1.94E+04	1.47E+04
170	1.39E+00	1.35E+05	9.75E+04	1.16E+05	1.34E+04	2.61E+04	1.97E+04
170	1.93E+00	1.37E+05	1.04E+05	1.21E+05	1.76E+04	3.42E+04	2.59E+04
170	2.68E+00	1.41E+05	1.13E+05	1.27E+05	2.29E+04	4.45E+04	3.37E+04
170	3.73E+00	1.45E+05	1.26E+05	1.35E+05	2.95E+04	5.71E+04	4.33E+04
170	5.18E+00	1.51E+05	1.44E+05	1.47E+05	3.77E+04	7.14E+04	5.46E+04
170	7.20E+00	1.58E+05	1.69E+05	1.64E+05	4.76E+04	8.93E+04	6.85E+04
150	1.00E-02	1.22E+05	5.15E+04	8.67E+04	3.31E+03	5.44E+03	4.38E+03
150	1.39E-02	1.24E+05	5.35E+04	8.90E+04	3.07E+03	0.00E+00	1.54E+03
150	1.93E-02	1.07E+05	6.00E+04	8.33E+04	8.38E+02	1.00E+04	5.43E+03
150	2.68E-02	1.06E+05	4.77E+04	7.68E+04	0.00E+00	0.00E+00	0.00E+00
150	3.73E-02	1.06E+05	5.47E+04	8.06E+04	0.00E+00	0.00E+00	0.00E+00
150	5.18E-02	1.07E+05	5.63E+04	8.16E+04	0.00E+00	1.28E+03	6.40E+02
150	7.20E-02	1.07E+05	5.33E+04	8.04E+04	0.00E+00	0.00E+00	0.00E+00
150	1.00E-01	1.08E+05	5.52E+04	8.15E+04	0.00E+00	0.00E+00	0.00E+00
150	1.39E-01	1.08E+05	4.99E+04	7.92E+04	0.00E+00	1.21E+03	6.07E+02
150	1.93E-01	1.09E+05	5.14E+04	8.02E+04	0.00E+00	4.17E+03	2.09E+03
150	2.68E-01	1.10E+05	5.17E+04	8.07E+04	0.00E+00	3.78E+03	1.89E+03
150	3.73E-01	1.11E+05	5.25E+04	8.15E+04	8.41E+02	6.20E+03	3.52E+03
150	5.18E-01	1.12E+05	5.47E+04	8.32E+04	2.46E+03	7.13E+03	4.79E+03
150	7.20E-01	1.13E+05	5.64E+04	8.48E+04	4.65E+03	1.13E+04	7.97E+03
150	1.00E+00	1.15E+05	5.88E+04	8.69E+04	7.33E+03	1.54E+04	1.14E+04
150	1.39E+00	1.17E+05	6.23E+04	8.99E+04	1.10E+04	2.04E+04	1.57E+04
150	1.93E+00	1.21E+05	6.88E+04	9.47E+04	1.55E+04	2.59E+04	2.07E+04
150	2.68E+00	1.25E+05	7.57E+04	1.00E+05	2.10E+04	3.34E+04	2.72E+04
150	3.73E+00	1.30E+05	8.59E+04	1.08E+05	2.78E+04	4.08E+04	3.43E+04
150	5.18E+00	1.37E+05	9.75E+04	1.17E+05	3.62E+04	5.19E+04	4.40E+04
150	7.20E+00	1.46E+05	1.14E+05	1.30E+05	4.61E+04	6.52E+04	5.56E+04

17. Data of parallel plate for M3204RU at frequency 1.0 rad/s, strain rate varied from 0.01-100 s<sup>-1</sup> point per decade set at 7 and the gap size was 0.6 mm. (Figures 3.13,3.19)

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
230	0.02	1.09E+05	7.89E+03	210	6.31	1.93E+05	1.83E+04
230	0.03	1.20E+05	6.21E+03	210	10.00	1.98E+05	2.48E+04
230	0.04	1.27E+05	4.79E+03	210	15.85	2.05E+05	3.34E+04
230	0.06	1.33E+05	3.71E+03	210	25.12	2.14E+05	4.47E+04
230	0.10	1.36E+05	3.03E+03	210	39.81	2.27E+05	5.93E+04
230	0.16	1.39E+05	2.53E+03	210	63.10	2.45E+05	7.77E+04
230	0.25	1.41E+05	2.38E+03	210	100.00	2.71E+05	1.01E+05
230	0.40	1.43E+05	2.65E+03	190	0.01	1.61E+05	5.58E+03
230	0.63	1.44E+05	3.39E+03	190	0.02	1.67E+05	3.75E+03
230	1.00	1.46E+05	4.36E+03	190	0.03	1.71E+05	2.46E+03
230	1.58	1.48E+05	5.89E+03	190	0.04	1.74E+05	1.78E+03
230	2.51	1.50E+05	8.21E+03	190	0.06	1.77E+05	1.58E+03
230	3.98	1.52E+05	1.15E+04	190	0.10	1.79E+05	1.41E+03
230	6.31	1.55E+05	1.60E+04	190	0.16	1.81E+05	1.51E+03
230	10.00	1.60E+05	2.23E+04	190	0.25	1.82E+05	1.96E+03
230	15.85	1.66E+05	3.08E+04	190	0.40	1.84E+05	2.76E+03
230	25.12	1.74E+05	4.22E+04	190	0.63	1.86E+05	3.69E+03
230	39.81	1.86E+05	5.70E+04	190	1.00	1.88E+05	5.09E+03
230	63.10	2.03E+05	7.62E+04	190	1.58	1.90E+05	7.19E+03
230	100.00	2.27E+05	1.01E+05	190	2.51	1.93E+05	1.00E+04
210	0.01	1.47E+05	8.28E+03	190	3.98	1.96E+05	1.39E+04
210	0.02	1.53E+05	6.39E+03	190	6.31	2.01E+05	1.90E+04
210	0.03	1.61E+05	4.95E+03	190	10.00	2.06E+05	2.57E+04
210	0.04	1.66E+05	3.92E+03	190	15.85	2.14E+05	3.46E+04
210	0.06	1.70E+05	3.11E+03	190	25.12	2.25E+05	4.59E+04
210	0.10	1.73E+05	2.92E+03	190	39.81	2.39E+05	6.02E+04
210	0.16	1.75E+05	3.08E+03	190	63.10	2.59E+05	7.80E+04
210	0.25	1.77E+05	2.97E+03	190	100.00	2.86E+05	9.98E+04
210	0.40	1.79E+05	3.63E+03	170	0.01	1.58E+05	1.50E+03
210	0.63	1.80E+05	4.43E+03	170	0.02	1.61E+05	4.05E+02
210	1.00	1.82E+05	5.48E+03	170	0.03	1.64E+05	0.00E+00
210	1.58	1.84E+05	7.36E+03	170	0.04	1.63E+05	0.00E+00
210	2.51	1.86E+05	9.87E+03	170	0.06	1.64E+05	0.00E+00
210	3.98	1.89E+05	1.35E+04	170	0.10	1.66E+05	0.00E+00

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	$G$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
170	0.16	1.67E+05	0.00E+00	130	0.03	1.34E+05	0.00E+00
170	0.25	1.69E+05	6.83E+02	130	0.04	1.36E+05	1.90E+02
170	0.40	1.71E+05	1.65E+03	130	0.06	1.37E+05	6.95E+02
170	0.63	1.72E+05	2.90E+03	130	0.10	1.39E+05	1.47E+03
170	1.00	1.75E+05	4.62E+03	130	0.16	1.40E+05	2.25E+03
170	1.58	1.77E+05	6.83E+03	130	0.25	1.42E+05	3.48E+03
170	2.51	1.81E+05	1.00E+04	130	0.40	1.44E+05	5.00E+03
170	3.98	1.85E+05	1.39E+04	130	0.63	1.47E+05	6.83E+03
170	6.31	1.90E+05	1.92E+04	130	1.00	1.50E+05	9.21E+03
170	10.00	1.97E+05	2.61E+04	130	1.58	1.53E+05	1.24E+04
170	15.85	2.06E+05	3.49E+04	130	2.51	1.52E+05	1.63E+04
170	25.12	2.18E+05	4.61E+04	130	3.98	1.58E+05	2.14E+04
170	39.81	2.34E+05	5.98E+04	130	6.31	1.66E+05	2.80E+04
170	63.10	2.56E+05	7.66E+04	130	10.00	1.75E+05	3.61E+04
170	100.00	2.85E+05	9.69E+04	130	15.85	1.87E+05	4.59E+04
150	0.01	1.50E+05	2.16E+02	130	25.12	2.02E+05	5.78E+04
150	0.02	1.51E+05	0.00E+00	130	39.81	2.22E+05	7.18E+04
150	0.03	1.53E+05	0.00E+00	130	63.10	2.48E+05	8.78E+04
150	0.04	1.55E+05	0.00E+00	130	100.00	2.81E+05	1.06E+05
150	0.06	1.56E+05	0.00E+00	120	0.01	1.00E+06	2.31E+05
150	0.10	1.57E+05	4.58E+02	120	0.02	1.29E+06	2.68E+05
150	0.16	1.59E+05	1.15E+03	120	0.03	1.43E+06	3.17E+05
150	0.25	1.60E+05	2.17E+03	120	0.04	1.54E+06	3.75E+05
150	0.40	1.62E+05	3.39E+03	120	0.06	1.66E+06	4.41E+05
150	0.63	1.65E+05	4.96E+03	120	0.10	1.78E+06	5.16E+05
150	1.00	1.67E+05	7.03E+03	120	0.16	1.92E+06	6.03E+05
150	1.58	1.70E+05	9.75E+03	120	0.25	2.08E+06	6.97E+05
150	2.51	1.74E+05	1.33E+04	120	0.40	2.28E+06	7.96E+05
150	3.98	1.79E+05	1.79E+04	120	0.63	2.50E+06	9.00E+05
150	6.31	1.85E+05	2.39E+04	120	1.00	2.75E+06	1.01E+06
150	10.00	1.93E+05	3.15E+04	120	1.58	3.03E+06	1.10E+06
150	15.85	2.04E+05	4.10E+04	120	2.51	3.36E+06	1.20E+06
150	25.12	2.18E+05	5.28E+04	120	3.98	3.74E+06	1.28E+06
150	39.81	2.36E+05	6.69E+04	120	6.31	4.14E+06	1.34E+06
150	63.10	2.59E+05	8.37E+04	120	10.00	4.58E+06	1.39E+06
150	100.00	2.91E+05	1.03E+05	120	15.85	5.07E+06	1.40E+06
130	0.01	1.49E+05	1.25E+03	120	25.12	5.60E+06	1.34E+06
130	0.02	1.36E+05	1.17E+03	120	39.81	6.18E+06	1.15E+06

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
120	63.10	6.79E+06	7.30E+05	110	1.00	1.03E+07	3.16E+06
120	100.00	7.32E+06	0.00E+00	110	1.58	1.12E+07	3.29E+06
110	0.01	5.39E+06	9.47E+05	110	2.51	1.21E+07	3.52E+06
110	0.02	5.73E+06	1.05E+06	110	3.98	1.30E+07	3.49E+06
110	0.03	6.08E+06	1.24E+06	110	6.31	1.43E+07	3.47E+06
110	0.04	6.35E+06	1.40E+06	110	10.00	1.55E+07	3.18E+06
110	0.06	6.69E+06	1.63E+06	110	15.85	1.69E+07	2.60E+06
110	0.10	7.12E+06	1.86E+06	110	25.12	1.86E+07	1.50E+06
110	0.16	7.54E+06	2.02E+06	110	39.81	2.01E+07	0.00E+00
110	0.25	8.08E+06	2.33E+06	110	63.10	1.94E+07	0.00E+00
110	0.40	8.74E+06	2.64E+06	110	100.00	1.61E+07	0.00E+00
110	0.63	9.50E+06	2.92E+06				

18. Data of parallel plate for H5604F at frequency 1.0 rad/s, strain rate varied from 0.01-100 s<sup>-1</sup> point per decade set at 7 and the gap size was 0.6 mm. (Figures 3.14, 3.20)

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
190	0.02	1.60E+04	1.46E+04	170	6.31	3.60E+05	1.97E+05
190	0.03	2.14E+04	1.85E+04	170	10.00	4.30E+05	2.25E+05
190	0.04	2.82E+04	2.36E+04	170	15.85	5.10E+05	2.53E+05
190	0.06	3.62E+04	2.92E+04	170	25.12	6.00E+05	2.80E+05
190	0.10	4.64E+04	3.63E+04	170	39.81	7.01E+05	3.05E+05
190	0.16	5.97E+04	4.55E+04	170	63.10	8.13E+05	3.30E+05
190	0.25	7.57E+04	5.61E+04	170	100.00	9.41E+05	3.55E+05
190	0.40	9.59E+04	6.91E+04	150	0.01	3.47E+04	2.07E+04
190	0.63	1.21E+05	8.48E+04	150	0.02	3.61E+04	2.14E+04
190	1.00	1.51E+05	1.04E+05	150	0.03	4.28E+04	2.37E+04
190	1.58	1.88E+05	1.25E+05	150	0.04	4.87E+04	2.73E+04
190	2.51	2.32E+05	1.49E+05	150	0.06	5.71E+04	3.23E+04
190	3.98	2.85E+05	1.76E+05	150	0.10	6.79E+04	3.96E+04
190	6.31	3.47E+05	2.05E+05	150	0.16	8.15E+04	4.80E+04
190	10.00	4.20E+05	2.36E+05	150	0.25	9.93E+04	5.84E+04
190	15.85	5.04E+05	2.67E+05	150	0.40	1.21E+05	7.15E+04
190	25.12	5.98E+05	2.98E+05	150	0.63	1.48E+05	8.71E+04
190	39.81	7.05E+05	3.29E+05	150	1.00	1.79E+05	1.05E+05
190	63.10	8.25E+05	3.59E+05	150	1.58	2.17E+05	1.24E+05
190	100.00	9.63E+05	3.91E+05	150	2.51	2.61E+05	1.45E+05
170	0.01	2.46E+04	1.89E+04	150	3.98	3.13E+05	1.68E+05
170	0.02	2.83E+04	2.03E+04	150	6.31	3.73E+05	1.92E+05
170	0.03	3.38E+04	2.14E+04	150	10.00	4.41E+05	2.17E+05
170	0.04	3.92E+04	2.55E+04	150	15.85	5.17E+05	2.40E+05
170	0.06	4.70E+04	3.05E+04	150	25.12	6.03E+05	2.63E+05
170	0.10	5.78E+04	3.70E+04	150	39.81	6.98E+05	2.84E+05
170	0.16	7.06E+04	4.55E+04	150	63.10	8.02E+05	3.03E+05
170	0.25	8.75E+04	5.59E+04	150	100.00	9.21E+05	3.22E+05
170	0.40	1.09E+05	6.84E+04	130	0.01	3.60E+04	1.78E+04
170	0.63	1.34E+05	8.39E+04	130	0.02	4.05E+04	1.94E+04
170	1.00	1.65E+05	1.02E+05	130	0.03	4.41E+04	2.31E+04
170	1.58	2.02E+05	1.22E+05	130	0.04	5.31E+04	2.88E+04
170	2.51	2.47E+05	1.45E+05	130	0.06	6.45E+04	3.45E+04
170	3.98	2.99E+05	1.70E+05	130	0.10	7.89E+04	4.30E+04

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
130	0.16	9.58E+04	5.27E+04	126	0.03	4.57E+04	2.32E+04
130	0.25	1.16E+05	6.47E+04	126	0.04	5.36E+04	2.84E+04
130	0.40	1.41E+05	7.85E+04	126	0.06	6.52E+04	3.48E+04
130	0.63	1.70E+05	9.45E+04	126	0.10	8.09E+04	4.27E+04
130	1.00	2.04E+05	1.12E+05	126	0.16	9.93E+04	5.30E+04
130	1.58	2.45E+05	1.31E+05	126	0.25	1.21E+05	6.52E+04
130	2.51	2.91E+05	1.51E+05	126	0.40	1.47E+05	7.95E+04
130	3.98	3.45E+05	1.72E+05	126	0.63	1.78E+05	9.55E+04
130	6.31	4.06E+05	1.93E+05	126	1.00	2.14E+05	1.13E+05
130	10.00	4.75E+05	2.14E+05	126	1.58	2.55E+05	1.33E+05
130	15.85	5.52E+05	2.33E+05	126	2.51	3.04E+05	1.52E+05
130	25.12	6.37E+05	2.51E+05	126	3.98	3.59E+05	1.74E+05
130	39.81	7.29E+05	2.65E+05	126	6.31	4.22E+05	1.95E+05
130	63.10	8.29E+05	2.78E+05	126	10.00	4.93E+05	2.16E+05
130	100.00	9.42E+05	2.90E+05	126	15.85	5.72E+05	2.35E+05
128	0.01	3.26E+04	1.42E+04	126	25.12	6.58E+05	2.52E+05
128	0.02	3.77E+04	1.75E+04	126	39.81	7.53E+05	2.65E+05
128	0.03	4.18E+04	2.19E+04	126	63.10	8.53E+05	2.73E+05
128	0.04	5.04E+04	2.63E+04	126	100.00	9.66E+05	2.78E+05
128	0.06	6.06E+04	3.19E+04	125	0.01	1.06E+07	1.64E+06
128	0.10	7.42E+04	3.94E+04	125	0.02	1.15E+07	1.90E+06
128	0.16	9.18E+04	4.83E+04	125	0.03	1.22E+07	1.91E+06
128	0.25	1.13E+05	5.92E+04	125	0.04	1.30E+07	2.13E+06
128	0.40	1.39E+05	7.21E+04	125	0.06	1.32E+07	2.91E+06
128	0.63	1.69E+05	8.70E+04	125	0.10	1.40E+07	3.85E+06
128	1.00	2.04E+05	1.03E+05	125	0.16	1.51E+07	4.44E+06
128	1.58	2.45E+05	1.21E+05	125	0.25	1.63E+07	5.04E+06
128	2.51	2.92E+05	1.39E+05	125	0.40	1.77E+07	5.83E+06
128	3.98	3.46E+05	1.58E+05	125	0.63	1.93E+07	6.61E+06
128	6.31	4.08E+05	1.77E+05	125	1.00	2.12E+07	7.36E+06
128	10.00	4.77E+05	1.94E+05	125	1.58	2.35E+07	8.19E+06
128	15.85	5.53E+05	2.09E+05	125	2.51	2.59E+07	8.88E+06
128	25.12	6.36E+05	2.21E+05	125	3.98	2.88E+07	8.98E+06
128	39.81	7.24E+05	2.30E+05	125	6.31	3.20E+07	8.72E+06
128	63.10	8.17E+05	2.36E+05	125	10.00	3.55E+07	7.98E+06
128	100.00	9.22E+05	2.41E+05	125	15.85	3.95E+07	5.35E+06
126	0.01	3.43E+04	1.62E+04	125	25.12	4.22E+07	1.68E+06
126	0.02	3.89E+04	1.91E+04	125	39.81	4.43E+07	0.00E+00

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
125	63.10	4.09E+07	0.00E+00	124	1.00	1.86E+07	7.13E+06
125	100.00	2.58E+07	0.00E+00	124	1.58	2.03E+07	7.87E+06
124	0.01	3.74E+06	1.19E+06	124	2.51	2.35E+07	8.70E+06
124	0.02	7.07E+06	1.52E+06	124	3.98	2.64E+07	8.60E+06
124	0.03	8.63E+06	1.64E+06	124	6.31	2.99E+07	9.04E+06
124	0.04	9.81E+06	2.29E+06	124	10.00	3.36E+07	8.51E+06
124	0.06	1.07E+07	2.94E+06	124	15.85	3.73E+07	6.24E+06
124	0.10	1.16E+07	3.42E+06	124	25.12	4.09E+07	2.08E+06
124	0.16	1.26E+07	4.15E+06	124	39.81	4.59E+07	0.00E+00
124	0.25	1.37E+07	4.76E+06	124	63.10	4.21E+07	0.00E+00
124	0.40	1.51E+07	5.63E+06	124	100.00	2.63E+07	0.00E+00
124	0.63	1.67E+07	6.43E+06				



19. Data of parallel plate for H5690S at frequency 1.0 rad/s,  
strain rate varied from 0.01-100 s<sup>-1</sup>  
point per decade set at 7 and the gap size was 0.6 mm. (Figures 3.15,3.21)

Temperature (°C)	$\omega$ (rad/s)	G' (dynes/cm <sup>2</sup> )			G'' (dynes/cm <sup>2</sup> )		
		No.1	No.2	Average	No.1	No.2	Average
230	1.00E-02	3.11E+04	9.85E+03	2.05E+04	9.32E+03	1.16E+04	1.05E+04
230	1.39E-02	5.32E+04	2.48E+04	3.90E+04	1.05E+04	1.02E+04	1.03E+04
230	1.93E-02	7.06E+04	3.36E+04	5.21E+04	1.03E+04	1.01E+04	1.02E+04
230	2.68E-02	8.89E+04	3.44E+04	6.16E+04	1.03E+04	1.38E+04	1.21E+04
230	3.73E-02	9.83E+04	4.53E+04	7.18E+04	9.78E+03	1.04E+04	1.01E+04
230	5.18E-02	1.05E+05	4.89E+04	7.72E+04	9.55E+03	1.21E+04	1.08E+04
230	7.20E-02	1.09E+05	5.29E+04	8.11E+04	9.31E+03	1.38E+04	1.16E+04
230	1.00E-01	1.13E+05	5.43E+04	8.36E+04	9.43E+03	1.88E+04	1.41E+04
230	1.39E-01	1.16E+05	6.32E+04	8.95E+04	9.86E+03	1.61E+04	1.30E+04
230	1.93E-01	1.19E+05	6.29E+04	9.09E+04	1.09E+04	2.40E+04	1.75E+04
230	2.68E-01	1.21E+05	7.25E+04	9.67E+04	1.25E+04	2.07E+04	1.66E+04
230	3.73E-01	1.23E+05	6.82E+04	9.58E+04	1.46E+04	2.22E+04	1.84E+04
230	5.18E-01	1.26E+05	7.53E+04	1.00E+05	1.75E+04	2.46E+04	2.10E+04
230	7.20E-01	1.28E+05	7.99E+04	1.04E+05	2.11E+04	3.67E+04	2.89E+04
230	1.00E+00	1.32E+05	7.93E+04	1.06E+05	2.57E+04	3.85E+04	3.21E+04
230	1.39E+00	1.36E+05	8.41E+04	1.10E+05	3.14E+04	5.04E+04	4.09E+04
230	1.93E+00	1.42E+05	9.26E+04	1.17E+05	3.86E+04	5.45E+04	4.66E+04
230	2.68E+00	1.48E+05	9.70E+04	1.22E+05	4.77E+04	6.56E+04	5.66E+04
230	3.73E+00	1.56E+05	1.04E+05	1.30E+05	5.87E+04	7.05E+04	6.46E+04
230	5.18E+00	1.66E+05	1.13E+05	1.39E+05	7.20E+04	8.36E+04	7.78E+04
230	7.20E+00	1.78E+05	1.22E+05	1.50E+05	8.82E+04	9.51E+04	9.17E+04
230	1.00E+01	1.94E+05	1.34E+05	1.64E+05	1.08E+05	1.13E+05	1.10E+05
230	1.39E+01	2.14E+05	1.45E+05	1.80E+05	1.31E+05	1.27E+05	1.29E+05
230	1.93E+01	2.38E+05	1.58E+05	1.98E+05	1.58E+05	1.50E+05	1.54E+05
230	2.68E+01	2.68E+05	1.74E+05	2.21E+05	1.89E+05	1.71E+05	1.80E+05
230	3.73E+01	3.06E+05	1.90E+05	2.48E+05	2.25E+05	1.92E+05	2.09E+05
230	5.18E+01	3.51E+05	2.16E+05	2.84E+05	2.65E+05	2.25E+05	2.45E+05
230	7.20E+01	4.07E+05	2.40E+05	3.24E+05	3.11E+05	2.54E+05	2.82E+05
230	1.00E+02	4.77E+05	2.74E+05	3.75E+05	3.62E+05	2.89E+05	3.26E+05
210	1.00E-02	1.15E+05	6.50E+04	9.00E+04	1.49E+04	9.83E+03	1.24E+04
210	1.39E-02	1.28E+05	7.08E+04	9.96E+04	1.51E+04	1.04E+04	1.27E+04
210	1.93E-02	1.41E+05	7.79E+04	1.09E+05	1.51E+04	1.51E+04	1.51E+04
210	2.68E-02	1.50E+05	8.30E+04	1.16E+05	1.44E+04	1.47E+04	1.46E+04
210	3.73E-02	1.55E+05	8.93E+04	1.22E+05	1.42E+04	1.53E+04	1.47E+04

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )			$G''$ (dynes/cm <sup>2</sup> )		
		No.1	No.2	Average	No.1	No.2	Average
210	7.20E-02	1.63E+05	9.68E+04	1.30E+05	1.40E+04	2.30E+04	1.85E+04
210	1.39E-01	1.70E+05	1.04E+05	1.37E+05	1.52E+04	1.94E+04	1.73E+04
210	1.93E-01	1.73E+05	1.09E+05	1.41E+05	1.65E+04	2.71E+04	2.18E+04
210	2.68E-01	1.77E+05	1.16E+05	1.46E+05	1.81E+04	3.53E+04	2.67E+04
210	3.73E-01	1.80E+05	1.16E+05	1.48E+05	2.01E+04	3.44E+04	2.72E+04
210	5.18E-01	1.83E+05	1.23E+05	1.53E+05	2.27E+04	4.19E+04	3.23E+04
210	7.20E-01	1.87E+05	1.27E+05	1.57E+05	2.59E+04	4.68E+04	3.64E+04
210	1.00E+00	1.92E+05	1.30E+05	1.61E+05	3.00E+04	5.62E+04	4.31E+04
210	1.39E+00	1.97E+05	1.41E+05	1.69E+05	3.51E+04	6.08E+04	4.80E+04
210	1.93E+00	2.03E+05	1.46E+05	1.74E+05	4.13E+04	6.89E+04	5.51E+04
210	2.68E+00	2.10E+05	1.49E+05	1.79E+05	4.91E+04	7.71E+04	6.31E+04
210	3.73E+00	2.18E+05	1.61E+05	1.90E+05	5.84E+04	8.93E+04	7.39E+04
210	5.18E+00	2.28E+05	1.74E+05	2.01E+05	6.97E+04	1.02E+05	8.58E+04
210	7.20E+00	2.40E+05	1.83E+05	2.11E+05	8.31E+04	1.17E+05	1.00E+05
210	1.00E+01	2.55E+05	1.96E+05	2.25E+05	9.90E+04	1.31E+05	1.15E+05
210	1.39E+01	2.73E+05	2.12E+05	2.43E+05	1.18E+05	1.49E+05	1.33E+05
210	1.93E+01	2.96E+05	2.27E+05	2.62E+05	1.39E+05	1.73E+05	1.56E+05
210	2.68E+01	3.23E+05	2.44E+05	2.84E+05	1.64E+05	1.94E+05	1.79E+05
210	3.73E+01	3.56E+05	2.69E+05	3.13E+05	1.92E+05	2.17E+05	2.05E+05
210	5.18E+01	3.96E+05	2.96E+05	3.46E+05	2.23E+05	2.52E+05	2.38E+05
210	7.20E+01	4.45E+05	3.28E+05	3.86E+05	2.58E+05	2.86E+05	2.72E+05
210	1.00E+02	5.04E+05	3.63E+05	4.33E+05	2.96E+05	3.22E+05	3.09E+05
190	1.00E-02	1.46E+05	1.05E+05	1.25E+05	1.50E+04	1.73E+04	1.62E+04
190	1.39E-02	1.51E+05	1.14E+05	1.32E+05	1.43E+04	2.08E+04	1.75E+04
190	1.93E-02	1.53E+05	1.21E+05	1.37E+05	1.43E+04	1.70E+04	1.57E+04
190	2.68E-02	1.46E+05	1.30E+05	1.38E+05	1.36E+04	2.42E+04	1.89E+04
190	3.73E-02	1.45E+05	1.36E+05	1.40E+05	1.38E+04	2.22E+04	1.80E+04
190	5.18E-02	1.45E+05	1.36E+05	1.41E+05	1.39E+04	2.45E+04	1.92E+04
190	7.20E-02	1.47E+05	1.45E+05	1.46E+05	1.43E+04	2.71E+04	2.07E+04
190	1.00E-01	1.48E+05	1.48E+05	1.48E+05	1.54E+04	3.04E+04	2.29E+04
190	1.39E-01	1.48E+05	1.52E+05	1.50E+05	1.61E+04	3.11E+04	2.36E+04
190	1.93E-01	1.51E+05	1.60E+05	1.55E+05	1.73E+04	3.79E+04	2.76E+04
190	2.68E-01	1.54E+05	1.63E+05	1.58E+05	1.89E+04	4.03E+04	2.96E+04
190	3.73E-01	1.57E+05	1.72E+05	1.65E+05	2.09E+04	5.03E+04	3.56E+04
190	5.18E-01	1.60E+05	1.72E+05	1.66E+05	2.36E+04	5.05E+04	3.70E+04
190	7.20E-01	1.65E+05	1.82E+05	1.73E+05	2.68E+04	5.50E+04	4.09E+04
190	1.00E+00	1.69E+05	1.86E+05	1.78E+05	3.08E+04	6.86E+04	4.97E+04
190	1.39E+00	1.75E+05	1.92E+05	1.83E+05	3.56E+04	7.22E+04	5.39E+04

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )			$G''$ (dynes/cm <sup>2</sup> )		
		No.1	No.2	Average	No.1	No.2	Average
190	2.68E+00	1.89E+05	2.10E+05	2.00E+05	4.85E+04	9.52E+04	7.19E+04
190	3.73E+00	1.99E+05	2.27E+05	2.13E+05	5.70E+04	1.08E+05	8.27E+04
190	7.20E+00	2.23E+05	2.49E+05	2.36E+05	7.87E+04	1.39E+05	1.09E+05
190	1.00E+01	2.38E+05	2.66E+05	2.52E+05	9.25E+04	1.61E+05	1.27E+05
190	1.39E+01	2.56E+05	2.86E+05	2.71E+05	1.09E+05	1.83E+05	1.46E+05
190	1.93E+01	2.78E+05	3.10E+05	2.94E+05	1.27E+05	2.01E+05	1.64E+05
190	2.68E+01	3.04E+05	3.26E+05	3.15E+05	1.48E+05	2.33E+05	1.90E+05
190	3.73E+01	3.35E+05	3.54E+05	3.45E+05	1.71E+05	2.56E+05	2.14E+05
190	5.18E+01	3.72E+05	3.86E+05	3.79E+05	1.97E+05	2.98E+05	2.47E+05
190	7.20E+01	4.16E+05	4.21E+05	4.19E+05	2.25E+05	3.40E+05	2.82E+05
190	1.00E+02	4.69E+05	4.61E+05	4.65E+05	2.56E+05	3.79E+05	3.17E+05
170	1.00E-02	1.15E+05	1.29E+05	1.22E+05	1.32E+04	2.37E+04	1.84E+04
170	1.39E-02	1.12E+05	1.42E+05	1.27E+05	1.16E+04	2.52E+04	1.84E+04
170	1.93E-02	1.14E+05	1.47E+05	1.31E+05	1.12E+04	2.48E+04	1.80E+04
170	2.68E-02	1.15E+05	1.60E+05	1.38E+05	1.14E+04	2.35E+04	1.74E+04
170	3.73E-02	1.18E+05	1.61E+05	1.39E+05	1.16E+04	3.18E+04	2.17E+04
170	5.18E-02	1.20E+05	1.66E+05	1.43E+05	1.21E+04	2.84E+04	2.03E+04
170	7.20E-02	1.23E+05	1.72E+05	1.48E+05	1.27E+04	3.45E+04	2.36E+04
170	1.00E-01	1.26E+05	1.81E+05	1.53E+05	1.35E+04	3.27E+04	2.31E+04
170	1.39E-01	1.28E+05	1.79E+05	1.54E+05	1.46E+04	4.23E+04	2.85E+04
170	1.93E-01	1.31E+05	1.88E+05	1.60E+05	1.60E+04	4.61E+04	3.11E+04
170	2.68E-01	1.35E+05	1.94E+05	1.64E+05	1.78E+04	4.77E+04	3.28E+04
170	3.73E-01	1.38E+05	2.01E+05	1.70E+05	1.99E+04	5.53E+04	3.76E+04
170	5.18E-01	1.42E+05	2.08E+05	1.75E+05	2.24E+04	5.87E+04	4.06E+04
170	7.20E-01	1.46E+05	2.15E+05	1.80E+05	2.56E+04	7.06E+04	4.81E+04
170	1.00E+00	1.51E+05	2.27E+05	1.89E+05	2.95E+04	7.56E+04	5.25E+04
170	1.39E+00	1.57E+05	2.38E+05	1.97E+05	3.40E+04	9.14E+04	6.27E+04
170	1.93E+00	1.63E+05	2.45E+05	2.04E+05	3.96E+04	9.74E+04	6.85E+04
170	2.68E+00	1.71E+05	2.54E+05	2.13E+05	4.63E+04	1.11E+05	7.84E+04
170	3.73E+00	1.80E+05	2.70E+05	2.25E+05	5.42E+04	1.26E+05	9.00E+04
170	5.18E+00	1.91E+05	2.85E+05	2.38E+05	6.34E+04	1.40E+05	1.01E+05
170	7.20E+00	2.04E+05	3.01E+05	2.53E+05	7.43E+04	1.60E+05	1.17E+05
170	1.00E+01	2.19E+05	3.20E+05	2.70E+05	8.69E+04	1.80E+05	1.33E+05
170	1.39E+01	2.37E+05	3.39E+05	2.88E+05	1.01E+05	2.02E+05	1.52E+05
170	1.93E+01	2.58E+05	3.66E+05	3.12E+05	1.18E+05	2.32E+05	1.75E+05
170	2.68E+01	2.83E+05	3.92E+05	3.37E+05	1.36E+05	2.61E+05	1.99E+05
170	3.73E+01	3.12E+05	4.26E+05	3.69E+05	1.56E+05	2.94E+05	2.25E+05
170	5.18E+01	3.46E+05	4.60E+05	4.03E+05	1.78E+05	3.26E+05	2.52E+05

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )			$G''$ (dynes/cm <sup>2</sup> )		
		No.1	No.2	Average	No.1	No.2	Average
170	1.00E+02	4.34E+05	5.48E+05	4.91E+05	2.27E+05	4.19E+05	3.23E+05
150	1.00E-02	1.10E+05	1.62E+05	1.36E+05	1.01E+04	2.11E+04	1.56E+04
150	1.39E-02	1.11E+05	1.82E+05	1.46E+05	9.80E+03	1.71E+04	1.34E+04
150	2.68E-02	1.15E+05	1.81E+05	1.48E+05	9.93E+03	2.92E+04	1.96E+04
150	3.73E-02	1.17E+05	1.84E+05	1.51E+05	1.04E+04	3.36E+04	2.20E+04
150	5.18E-02	1.19E+05	1.95E+05	1.57E+05	1.10E+04	3.69E+04	2.39E+04
150	7.20E-02	1.21E+05	1.96E+05	1.59E+05	1.17E+04	4.37E+04	2.77E+04
150	1.00E-01	1.24E+05	2.06E+05	1.65E+05	1.27E+04	4.60E+04	2.94E+04
150	1.39E-01	1.26E+05	2.07E+05	1.66E+05	1.40E+04	5.34E+04	3.37E+04
150	1.93E-01	1.29E+05	2.12E+05	1.70E+05	1.56E+04	5.56E+04	3.56E+04
150	2.68E-01	1.32E+05	2.21E+05	1.76E+05	1.75E+04	5.91E+04	3.83E+04
150	3.73E-01	1.35E+05	2.27E+05	1.81E+05	1.98E+04	6.98E+04	4.48E+04
150	5.18E-01	1.39E+05	2.38E+05	1.88E+05	2.25E+04	7.98E+04	5.12E+04
150	7.20E-01	1.43E+05	2.44E+05	1.94E+05	2.59E+04	8.90E+04	5.75E+04
150	1.00E+00	1.49E+05	2.51E+05	2.00E+05	3.00E+04	9.69E+04	6.34E+04
150	1.39E+00	1.54E+05	2.69E+05	2.12E+05	3.48E+04	1.10E+05	7.22E+04
150	1.93E+00	1.61E+05	2.81E+05	2.21E+05	4.06E+04	1.15E+05	7.77E+04
150	2.68E+00	1.69E+05	2.94E+05	2.32E+05	4.75E+04	1.33E+05	9.03E+04
150	3.73E+00	1.79E+05	3.12E+05	2.46E+05	5.55E+04	1.57E+05	1.06E+05
150	5.18E+00	1.90E+05	3.27E+05	2.58E+05	6.48E+04	1.75E+05	1.20E+05
150	7.20E+00	2.03E+05	3.48E+05	2.75E+05	7.56E+04	1.92E+05	1.34E+05
150	1.00E+01	2.18E+05	3.73E+05	2.96E+05	8.80E+04	2.17E+05	1.52E+05
150	1.39E+01	2.37E+05	4.03E+05	3.20E+05	1.02E+05	2.44E+05	1.73E+05
150	1.93E+01	2.58E+05	4.28E+05	3.43E+05	1.17E+05	2.79E+05	1.98E+05
150	2.68E+01	2.83E+05	4.53E+05	3.68E+05	1.34E+05	3.09E+05	2.22E+05
150	3.73E+01	3.12E+05	4.90E+05	4.01E+05	1.53E+05	3.46E+05	2.49E+05
150	5.18E+01	3.46E+05	5.42E+05	4.44E+05	1.73E+05	3.87E+05	2.80E+05
150	7.20E+01	3.86E+05	5.99E+05	4.92E+05	1.93E+05	4.34E+05	3.13E+05
150	1.00E+02	4.32E+05	6.50E+05	5.41E+05	2.15E+05	4.96E+05	3.55E+05

20. Data of parallel plate for H6205JU at frequency 1.0 rad/s,  
strain rate varied from 0.01-100 s<sup>-1</sup>  
point per decade set at 7 and the gap size was 0.6 mm. (Figures 3.16, 3.22)

Temperature (°C)	$\omega$ (rad/s)	G' (dynes/cm <sup>2</sup> )	G'' (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	G' (dynes/cm <sup>2</sup> )	G'' (dynes/cm <sup>2</sup> )
190	0.02	8.11E+02	8.57E+02	170	6.31	3.64E+04	2.89E+04
190	0.03	1.91E+03	1.34E+03	170	10.00	4.42E+04	3.83E+04
190	0.04	3.19E+03	1.68E+03	170	15.85	5.49E+04	5.05E+04
190	0.06	4.40E+03	2.00E+03	170	25.12	7.00E+04	6.71E+04
190	0.10	5.43E+03	2.47E+03	170	39.81	9.23E+04	8.93E+04
190	0.16	6.43E+03	2.99E+03	170	63.10	1.24E+05	1.18E+05
190	0.25	7.40E+03	3.84E+03	170	100.00	1.66E+05	1.55E+05
190	0.40	8.45E+03	4.90E+03	150	0.01	1.50E+04	1.45E+03
190	0.63	9.65E+03	6.37E+03	150	0.02	1.62E+04	1.48E+03
190	1.00	1.12E+04	8.42E+03	150	0.03	1.71E+04	1.71E+03
190	1.58	1.32E+04	1.12E+04	150	0.04	1.78E+04	2.02E+03
190	2.51	1.58E+04	1.51E+04	150	0.06	1.86E+04	2.58E+03
190	3.98	1.95E+04	2.04E+04	150	0.10	1.94E+04	3.20E+03
190	6.31	2.46E+04	2.75E+04	150	0.16	2.03E+04	4.06E+03
190	10.00	3.20E+04	3.73E+04	150	0.25	2.15E+04	5.20E+03
190	15.85	4.25E+04	5.05E+04	150	0.40	2.29E+04	6.60E+03
190	25.12	5.75E+04	6.86E+04	150	0.63	2.47E+04	8.56E+03
190	39.81	7.85E+04	9.27E+04	150	1.00	2.70E+04	1.10E+04
190	63.10	1.07E+05	1.24E+05	150	1.58	2.99E+04	1.43E+04
190	100.00	1.47E+05	1.64E+05	150	2.51	3.38E+04	1.86E+04
170	0.01	6.89E+03	1.62E+03	150	3.98	3.88E+04	2.44E+04
170	0.02	9.01E+03	1.71E+03	150	6.31	4.58E+04	3.20E+04
170	0.03	1.07E+04	1.85E+03	150	10.00	5.54E+04	4.22E+04
170	0.04	1.19E+04	2.05E+03	150	15.85	6.87E+04	5.56E+04
170	0.06	1.29E+04	2.33E+03	150	25.12	8.76E+04	7.35E+04
170	0.10	1.41E+04	2.84E+03	150	39.81	1.13E+05	9.62E+04
170	0.16	1.50E+04	3.49E+03	150	63.10	1.46E+05	1.25E+05
170	0.25	1.61E+04	4.49E+03	150	100.00	1.91E+05	1.60E+05
170	0.40	1.73E+04	5.75E+03	130	0.01	1.71E+04	1.26E+03
170	0.63	1.87E+04	7.39E+03	130	0.02	1.68E+04	1.74E+03
170	1.00	2.06E+04	9.64E+03	130	0.03	1.93E+04	1.94E+03
170	1.58	2.31E+04	1.26E+04	130	0.04	1.86E+04	2.51E+03
170	2.51	2.63E+04	1.66E+04	130	0.06	1.93E+04	3.40E+03
170	3.98	3.06E+04	2.18E+04	130	0.10	2.03E+04	4.45E+03

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
130	0.16	2.17E+04	5.54E+03	126	0.03	1.97E+04	2.49E+03
130	0.25	2.34E+04	7.15E+03	126	0.04	2.07E+04	3.01E+03
130	0.40	2.55E+04	9.12E+03	126	0.06	2.16E+04	4.09E+03
130	0.63	2.82E+04	1.17E+04	126	0.10	2.27E+04	5.39E+03
130	1.00	3.18E+04	1.49E+04	126	0.16	2.44E+04	6.82E+03
130	1.58	3.65E+04	1.93E+04	126	0.25	2.65E+04	8.72E+03
130	2.51	4.26E+04	2.50E+04	126	0.40	2.94E+04	1.13E+04
130	3.98	5.10E+04	3.27E+04	126	0.63	3.32E+04	1.46E+04
130	6.31	6.21E+04	4.29E+04	126	1.00	3.81E+04	1.90E+04
130	10.00	7.71E+04	5.63E+04	126	1.58	4.46E+04	2.47E+04
130	15.85	9.65E+04	7.36E+04	126	2.51	5.36E+04	3.25E+04
130	25.12	1.22E+05	9.51E+04	126	3.98	6.57E+04	4.27E+04
130	39.81	1.53E+05	1.22E+05	126	6.31	8.20E+04	5.63E+04
130	63.10	1.95E+05	1.53E+05	126	10.00	1.04E+05	7.43E+04
130	100.00	2.47E+05	1.90E+05	126	15.85	1.31E+05	9.66E+04
128	0.01	1.86E+04	9.49E+02	126	25.12	1.66E+05	1.24E+05
128	0.02	1.83E+04	1.82E+03	126	39.81	2.11E+05	1.57E+05
128	0.03	1.91E+04	2.31E+03	126	63.10	2.67E+05	1.95E+05
128	0.04	1.98E+04	3.04E+03	126	100.00	3.39E+05	2.39E+05
128	0.06	2.08E+04	3.79E+03	125	0.01	1.40E+07	2.96E+06
128	0.10	2.19E+04	4.69E+03	125	0.02	1.57E+07	3.44E+06
128	0.16	2.34E+04	5.98E+03	125	0.03	1.68E+07	4.07E+06
128	0.25	2.50E+04	7.55E+03	125	0.04	1.78E+07	4.57E+06
128	0.40	2.72E+04	9.50E+03	125	0.06	1.95E+07	5.40E+06
128	0.63	2.99E+04	1.22E+04	125	0.10	2.11E+07	6.06E+06
128	1.00	3.34E+04	1.55E+04	125	0.16	2.33E+07	6.30E+06
128	1.58	3.80E+04	1.99E+04	125	0.25	2.53E+07	7.15E+06
128	2.51	4.40E+04	2.56E+04	125	0.40	2.76E+07	8.06E+06
128	3.98	5.22E+04	3.32E+04	125	0.63	3.05E+07	8.91E+06
128	6.31	6.35E+04	4.32E+04	125	1.00	3.33E+07	9.82E+06
128	10.00	7.92E+04	5.66E+04	125	1.58	3.65E+07	1.06E+07
128	15.85	1.01E+05	7.40E+04	125	2.51	3.94E+07	1.10E+07
128	25.12	1.28E+05	9.58E+04	125	3.98	4.15E+07	1.09E+07
128	39.81	1.62E+05	1.23E+05	125	6.31	4.56E+07	1.15E+07
128	63.10	2.05E+05	1.54E+05	125	10.00	5.08E+07	1.14E+07
128	100.00	2.61E+05	1.91E+05	125	15.85	5.71E+07	9.69E+06
126	0.01	1.93E+04	1.04E+03	125	25.12	6.12E+07	5.78E+04
126	0.02	2.06E+04	1.31E+03	125	39.81	6.24E+07	0.00E+00

Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )	Temperature (°C)	$\omega$ (rad/s)	$G'$ (dynes/cm <sup>2</sup> )	$G''$ (dynes/cm <sup>2</sup> )
125	63.10	5.19E+07	0.00E+00	124	1.00	2.70E+07	7.99E+06
125	100.00	3.03E+07	0.00E+00	124	1.58	2.95E+07	8.48E+06
124	0.01	5.14E+06	1.65E+06	124	2.51	3.29E+07	8.82E+06
124	0.02	1.03E+07	2.58E+06	124	3.98	3.60E+07	9.93E+06
124	0.03	1.27E+07	3.08E+06	124	6.31	3.84E+07	1.00E+07
124	0.04	1.43E+07	3.58E+06	124	10.00	4.27E+07	1.00E+07
124	0.06	1.58E+07	4.21E+06	124	15.85	4.77E+07	9.08E+06
124	0.10	1.71E+07	4.82E+06	124	25.12	5.12E+07	5.27E+06
124	0.16	1.86E+07	5.66E+06	124	39.81	5.89E+07	0.00E+00
124	0.25	2.09E+07	6.19E+06	124	63.10	5.00E+07	0.00E+00
124	0.40	2.24E+07	6.79E+06	124	100.00	3.17E+07	0.00E+00
124	0.63	2.50E+07	7.74E+06				

21. Data of slip velocity for L2009F at temperature of 190 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c=33.36$   $1/d_c=1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.97mm Length 13.77mm  $l_c/d_c=7.00$   $1/d_c=0.51\text{mm}^{-1}$

(Figures 3.87, 3.90)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die614				$\gamma_a$ (1/s) Die 214				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.03E+06	3.25E+01	2.98E+01	3.12E+01	1.91E+00	2.22E+01	2.38E+01	2.30E+01	1.13E+00	1.59E+01	2.01E+01	1.80E+01	2.97E+00
1.27E+06	4.33E+01	-	-	-	3.02E+01	-	-	-	2.20E+01	-	-	-
1.36E+06	4.87E+01	-	-	-	3.34E+01	-	-	-	2.38E+01	-	-	-
1.53E+06	5.96E+01	6.77E+01	6.37E+01	5.73E+00	3.97E+01	4.29E+01	4.13E+01	2.26E+00	2.74E+01	2.75E+01	2.75E+01	7.07E-02
1.61E+06	6.50E+01	-	-	-	4.29E+01	-	-	-	2.92E+01	-	-	-
1.86E+06	8.66E+01	-	-	-	5.56E+01	-	-	-	3.66E+01	-	-	-
1.95E+06	9.20E+01	1.00E+02	9.60E+01	5.66E+00	5.88E+01	6.36E+01	6.12E+01	3.39E+00	3.81E+01	4.08E+01	3.95E+01	1.91E+00



$V_s$ (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
3.94E-01	5.51E-01	4.73E-01	1.11E-01	2.66E-03	3.80E-03	3.23E-03	8.06E-04
5.28E-01	-	-	-	3.00E-03	-	-	-
6.38E-01	-	-	-	3.60E-03	-	-	-
8.08E-01	1.05E+00	9.29E-01	1.71E-01	4.30E-03	5.89E-03	5.05E-03	1.06E-03
8.69E-01	-	-	-	4.50E-03	-	-	-
9.79E-01	-	-	-	5.05E-03	-	-	-
1.04E+00	-	-	-	5.17E-03	-	-	-
1.17E+00	1.40E+00	1.29E+00	1.63E-01	5.17E-03	6.36E-03	5.77E-03	8.41E-04

22. Data of slip velocity for L2020F at temperature of 150 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c = 33.36$   $1/d_c = 1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.967mm Length 13.77mm  $l_c/d_c = 7.00$   $1/d_c = 0.51\text{mm}^{-1}$

(Figures 3.74, 3.78)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die214				$\gamma_a$ (1/s) Die 614				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.12E+06	2.38E+01	2.54E+01	2.46E+01	1.13E+00	3.25E+01	3.52E+01	3.39E+01	1.91E+00	1.85E+01	1.93E+01	1.89E+01	5.65E-01
1.21E+06	2.70E+01	-	-	-	3.79E+01	-	-	-	2.02E+01	-	-	-
1.32E+06	3.18E+01	-	-	-	4.33E+01	-	-	-	2.46E+01	-	-	-
1.41E+06	3.50E+01	3.65E+01	3.58E+01	1.06E+00	4.87E+01	5.14E+01	5.01E+01	1.91E+00	2.64E+01	2.73E+01	2.69E+01	6.36E-01
1.57E+06	4.13E+01	-	-	-	5.96E+01	-	-	-	3.00E+01	-	-	-
1.65E+06	4.45E+01	-	-	-	6.50E+01	-	-	-	3.18E+01	-	-	-
1.72E+06	4.93E+01	5.24E+01	5.09E+01	2.19E+00	7.04E+01	7.58E+01	7.31E+01	3.82E+00	3.61E+01	3.79E+01	3.70E+01	1.27E+00

V <sub>s</sub> (cm/s)				b (mm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.32E-01	1.48E-01	1.40E-01	1.13E-02	7.15E-03	7.69E-03	7.42E-03	3.82E-04
1.66E-01	-	-	-	8.19E-03	-	-	-
1.76E-01	-	-	-	7.14E-03	-	-	-
2.10E-01	2.27E-01	2.19E-01	1.20E-02	7.96E-03	8.30E-03	8.13E-03	2.40E-04
2.78E-01	-	-	-	9.28E-03	-	-	-
3.12E-01	-	-	-	9.83E-03	-	-	-
3.22E-01	3.56E-01	3.39E-01	2.40E-02	8.92E-03	9.39E-03	9.16E-03	3.32E-04

23. Data of slip velocity for L2020F at temperature of 170 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c = 33.36$   $1/d_c = 1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.967mm Length 13.77mm  $l_c/d_c = 7.00$   $1/d_c = 0.51\text{mm}^{-1}$

(Figures 3.74, 3.79)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die214				$\gamma_a$ (1/s) Die 614				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.15E+06	3.65E+01	3.97E+01	3.81E+01	2.26E+00	4.87E+01	5.14E+01	5.01E+01	1.91E+00	2.90E+01	3.24E+01	3.07E+01	2.40E+00
1.30E+06	4.61E+01	-	-	-	5.96E+01	-	-	-	3.77E+01	-	-	-
1.44E+06	5.40E+01	-	-	-	7.04E+01	-	-	-	4.39E+01	-	-	-
1.59E+06	6.04E+01	-	-	-	8.66E+01	-	-	-	4.41E+01	-	-	-
1.83E+06	7.63E+01	8.10E+01	7.87E+01	3.32E+00	1.14E+02	1.22E+02	1.18E+02	5.66E+00	5.30E+01	5.57E+01	5.44E+01	1.91E+00
1.88E+06	7.95E+01	-	-	-	1.19E+02	-	-	-	5.48E+01	-	-	-
2.06E+06	9.53E+01	-	-	-	1.46E+02	-	-	-	6.37E+01	-	-	-
2.12E+06	1.00E+02	-	-	-	1.57E+02	-	-	-	6.47E+01	-	-	-
2.18E+06	1.05E+02	1.06E+02	1.06E+02	7.07E-01	1.68E+02	1.73E+02	1.71E+02	3.54E+00	6.57E+01	6.49E+01	6.53E+01	5.65E-01

V <sub>s</sub> (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.86E-01	1.79E-01	1.83E-01	4.90E-03	6.40E-03	5.50E-03	5.95E-03	6.36E-04
2.05E-01	-	-	-	5.44E-03	-	-	-
2.49E-01	-	-	-	5.68E-03	-	-	-
4.00E-01	-	-	-	9.07E-03	-	-	-
5.70E-01	6.22E-01	5.96E-01	3.67E-02	1.08E-02	1.11E-02	1.10E-02	2.12E-04
6.05E-01	-	-	-	1.10E-02	-	-	-
7.75E-01	-	-	-	1.22E-02	-	-	-
8.67E-01	-	-	-	1.34E-02	-	-	-
9.60E-01	1.02E+00	9.90E-01	4.24E-02	1.46E-02	1.57E-02	1.52E-02	7.77E-04

24. Data of slip velocity for L2020F at temperature of 190 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c=33.36$   $1/d_c=1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.97mm Length 13.77mm  $l_c/d_c=7.00$   $1/d_c=0.51\text{mm}^{-1}$

(Figures 3.74, 3.80)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\dot{\gamma}_a$ (1/s) Die614				$\dot{\gamma}_a$ (1/s) Die 214				$\dot{\gamma}_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.22E+06	6.77E+01	7.38E+01	7.08E+01	4.31E+00	4.77E+01	5.08E+01	4.93E+01	2.19E+00	3.52E+01	3.70E+01	3.61E+01	1.27E+00
1.43E+06	8.12E+01	-	-	-	5.40E+01	-	-	-	3.71E+01	-	-	-
1.50E+06	9.47E+01	-	-	-	6.04E+01	-	-	-	3.90E+01	-	-	-
1.55E+06	1.08E+02	-	-	-	6.99E+01	-	-	-	4.61E+01	-	-	-
1.71E+06	1.49E+02	1.62E+02	1.56E+02	9.19E+00	9.53E+01	1.00E+02	9.77E+01	3.32E+00	6.20E+01	6.14E+01	6.17E+01	4.24E-01
1.88E+06	1.76E+02	-	-	-	1.11E+02	-	-	-	7.10E+01	-	-	-
1.94E+06	1.89E+02	-	-	-	1.16E+02	-	-	-	7.03E+01	-	-	-
2.00E+06	2.03E+02	2.11E+02	2.07E+02	5.66E+00	1.21E+02	1.24E+02	1.23E+02	2.12E+00	6.96E+01	6.97E+01	6.97E+01	7.10E-02

V <sub>s</sub> (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
3.05E-01	3.39E-01	3.22E-01	2.40E-02	8.60E-03	9.15E-03	8.88E-03	3.89E-04
4.14E-01	-	-	-	1.11E-02	-	-	-
5.24E-01	-	-	-	1.34E-02	-	-	-
5.85E-01	-	-	-	1.27E-02	-	-	-
8.16E-01	9.50E-01	8.83E-01	9.47E-02	1.31E-02	1.54E-02	1.43E-02	1.63E-03
9.87E-01	-	-	-	1.39E-02	-	-	-
1.12E+00	-	-	-	1.59E-02	-	-	-
1.25E+00	1.33E+00	1.29E+00	5.65E-02	1.80E-02	1.91E-02	1.86E-02	7.78E-04

25. Data of slip velocity for L2020F at temperature of 210 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c = 33.36$   $1/d_c = 1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.967mm Length 13.77mm  $l_c/d_c = 7.00$   $1/d_c = 0.51\text{mm}^{-1}$

(Figures 3.74, 3.81)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die214				$\gamma_a$ (1/s) Die 614				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.18E+06	7.95E+01	8.26E+01	8.10E+01	2.25E+00	1.03E+02	1.08E+02	1.06E+02	3.83E+00	6.49E+01	6.67E+01	6.58E+01	1.26E+00
1.26E+06	8.42E+01	-	-	-	1.14E+02	-	-	-	6.59E+01	-	-	-
1.32E+06	8.74E+01	-	-	-	1.25E+02	-	-	-	6.43E+01	-	-	-
1.36E+06	9.06E+01	9.38E+01	9.22E+01	2.25E+00	1.30E+02	1.41E+02	1.35E+02	7.65E+00	6.61E+01	6.45E+01	6.53E+01	1.11E+00
1.47E+06	1.00E+02	-	-	-	1.52E+02	-	-	-	6.81E+01	-	-	-
1.50E+06	1.03E+02	-	-	-	1.57E+02	-	-	-	6.99E+01	-	-	-
1.59E+06	1.11E+02	-	-	-	1.79E+02	-	-	-	6.93E+01	-	-	-
1.66E+06	1.16E+02	1.19E+02	1.18E+02	2.25E+00	1.95E+02	2.03E+02	1.99E+02	5.75E+00	6.69E+01	6.71E+01	6.70E+01	1.04E-01



$V_s$ (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
3.57E-01	3.91E-01	3.74E-01	2.41E-02	5.50E-03	5.86E-03	5.68E-03	2.54E-04
4.49E-01	-	-	-	6.80E-03	-	-	-
5.66E-01	-	-	-	8.80E-03	-	-	-
6.00E-01	7.17E-01	6.58E-01	8.25E-02	9.08E-03	1.11E-02	1.01E-02	1.43E-03
7.85E-01	-	-	-	1.15E-02	-	-	-
8.19E-01	-	-	-	1.17E-02	-	-	-
1.03E+00	-	-	-	1.48E-02	-	-	-
1.20E+00	1.28E+00	1.24E+00	5.32E-02	1.79E-02	1.91E-02	1.85E-02	8.48E-04

26. Data of slip velocity for L2020F at temperature of 230 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c = 33.36$   $1/d_c = 1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.967mm Length 13.77mm  $l_c/d_c = 7.00$   $1/d_c = 0.51\text{mm}^{-1}$

(Figures 3.74, 3.82)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die214				$\gamma_a$ (1/s) Die 614				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.09E+06	1.11E+02	1.14E+02	1.13E+02	2.12E+00	1.46E+02	1.52E+02	1.49E+02	4.24E+00	8.95E+01	9.13E+01	9.04E+01	1.27E+00
1.17E+06	1.21E+02	-	-	-	1.62E+02	-	-	-	9.48E+01	-	-	-
1.22E+06	1.27E+02	-	-	-	1.73E+02	-	-	-	9.84E+01	-	-	-
1.25E+06	1.32E+02	1.35E+02	1.34E+02	2.13E+00	1.89E+02	1.95E+02	1.92E+02	4.24E+00	9.60E+01	9.78E+01	9.69E+01	1.27E+00
1.32E+06	1.43E+02	-	-	-	2.11E+02	-	-	-	1.01E+02	-	-	-
1.37E+06	1.49E+02	-	-	-	2.22E+02	-	-	-	1.04E+02	-	-	-
1.40E+06	1.53E+02	1.56E+02	1.55E+02	2.12E+00	2.27E+02	2.36E+02	2.32E+02	6.36E+00	1.06E+02	1.06E+02	1.06E+02	1.41E-03

V <sub>s</sub> (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
5.33E-01	5.67E-01	5.50E-01	2.40E-02	5.95E-03	6.20E-03	6.07E-03	1.76E-04
6.35E-01	-	-	-	6.70E-03	-	-	-
7.03E-01	-	-	-	7.14E-03	-	-	-
8.78E-01	9.12E-01	8.95E-01	2.40E-02	9.14E-03	9.30E-03	9.22E-03	1.13E-04
1.04E+00	-	-	-	1.03E-02	-	-	-
1.11E+00	-	-	-	1.06E-02	-	-	-
1.14E+00	1.22E+00	1.18E+00	5.65E-02	1.08E-02	1.14E-02	1.11E-02	4.24E-04

27. Data of slip velocity for M3204RU at temperature of 190 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c = 33.36$   $1/d_c = 1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.967mm Length 13.77mm  $l_c/d_c = 7.00$   $1/d_c = 0.51\text{mm}^{-1}$

(Figures 3.87, 3.92)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\dot{\gamma}_a$ (1/s) Die214				$\dot{\gamma}_a$ (1/s) Die 614				$\dot{\gamma}_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S D	No.1	No.2	Average	S.D
1.00E+06	9.53E+01	9.69E+01	9.61E+01	1.13E+00	9.70E+01	1.06E+02	1.02E+02	6.36E+00	9.43E+01	9.15E+01	9.29E+01	1.98E+00
1.19E+06	1.14E+02	-	-	-	1.57E+02	-	-	-	8.79E+01	-	-	-
1.23E+06	1.18E+02	-	-	-	1.68E+02	-	-	-	8.63E+01	-	-	-
1.57E+06	1.81E+02	1.84E+02	1.83E+02	2.12E+00	2.44E+02	2.54E+02	2.49E+02	7.07E+00	1.42E+02	1.41E+02	1.42E+02	7.07E-01
1.63E+06	1.84E+02	-	-	-	2.71E+02	-	-	-	1.31E+02	-	-	-
1.67E+06	1.88E+02	-	-	-	2.84E+02	-	-	-	1.27E+02	-	-	-
1.71E+06	1.91E+02	-	-	-	2.98E+02	-	-	-	1.24E+02	-	-	-
1.76E+06	1.94E+02	1.99E+02	1.97E+02	3.54E+00	3.25E+02	3.52E+02	3.39E+02	1.91E+01	1.12E+02	1.03E+02	1.08E+02	6.36E+00

$V_s$ (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
2.51E-01	1.30E-01	7.75E-02	7.42E-02	2.67E-04	1.44E-03	8.54E-04	8.29E-04
6.49E-01	-	-	-	7.38E-03	-	-	-
7.66E-01	-	-	-	8.87E-03	-	-	-
9.53E-01	1.07E+00	1.01E+00	8.20E-02	6.69E-03	7.59E-03	7.14E-03	6.36E-04
1.32E+00	-	-	-	1.01E-02	-	-	-
1.47E+00	-	-	-	1.16E-02	-	-	-
1.63E+00	-	-	-	1.31E-02	-	-	-
2.00E+00	2.34E+00	2.17E+00	2.40E-01	1.78E-02	2.26E-02	2.02E-02	3.39E-03

28. Data of slip velocity for H5604F at temperature of 190 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c=33.36$   $1/d_c=1.33\text{mm}^{-1}$

Capillary no.1860 Diameter 1.25mm Length 50.19mm  $l_c/d_c=40.15$   $1/d_c=0.80\text{mm}^{-1}$

(Figures 3.88, 3.93)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die614				$\gamma_a$ (1/s) Die 1860				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S D	No.1	No.2	Average	S.D
1.20E+06	2.17E+01	2.71E+01	2.43E+01	3.82E+00	1.86E+01	2.48E+01	2.17E+01	4.38E+00	1.39E+01	2.13E+01	1.76E+01	5.21E+00
1.42E+06	3.79E+01	-	-	-	3.10E+01	-	-	-	2.05E+01	-	-	-
1.79E+06	9.20E+01	9.47E+01	9.34E+01	1.91E+00	7.43E+01	8.05E+01	7.74E+01	4.38E+00	4.75E+01	5.89E+01	5.32E+01	8.09E+00
1.98E+06	1.14E+02	-	-	-	9.29E+01	-	-	-	6.14E+01	-	-	-
2.09E+06	1.41E+02	-	-	-	1.18E+02	-	-	-	8.27E+01	-	-	-
2.39E+06	2.38E+02	2.44E+02	2.41E+02	3.83E+00	2.04E+02	2.17E+02	2.10E+02	8.75E+00	1.53E+02	1.76E+02	1.64E+02	1.62E+01

V <sub>s</sub> (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
7.20E-02	5.40E-02	6.30E-02	1.30E-02	5.00E-03	2.50E-03	3.90E-03	1.90E-03
1.64E-01	—	—	—	8.00E-03	—	—	—
4.19E-01	3.36E-01	3.77E-01	5.80E-02	8.00E-03	5.70E-03	7.30E-03	2.20E-03
4.92E-01	—	—	—	8.00E-03	—	—	—
5.46E-01	—	—	—	7.00E-03	—	—	—
8.01E-01	6.36E-01	7.18E-01	1.17E-01	5.00E-03	3.60E-03	4.40E-03	1.10E-03

29. Data of slip velocity for H5690S at temperature of 150 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c = 33.36$   $1/d_c = 1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.967mm Length 13.77mm  $l_c/d_c = 7.00$   $1/d_c = 0.51\text{mm}^{-1}$

(Figure 3.75 a)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\dot{\gamma}_a$ (1/s) Die214				$\dot{\gamma}_a$ (1/s) Die 614				$\dot{\gamma}_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S D
1.12E+06	1.11E+01	1.27E+01	1.19E+01	1.12E+00	1.35E+01	1.90E+01	1.62E+01	3.83E+00	9.62E+00	8.83E+00	9.23E+00	5.59E-01
1.33E+06	1.43E+01	-	-	-	2.17E+01	-	-	-	9.72E+00	-	-	-
1.43E+06	1.59E+01	-	-	-	2.44E+01	-	-	-	1.06E+01	-	-	-
1.52E+06	1.75E+01	-	-	-	2.71E+01	-	-	-	1.15E+01	-	-	-
1.61E+06	1.91E+01	-	-	-	2.98E+01	-	-	-	1.24E+01	-	-	-
1.71E+06	2.07E+01	2.22E+01	2.15E+01	1.12E+00	3.25E+01	3.52E+01	3.38E+01	1.92E+00	1.33E+01	1.42E+01	1.38E+01	6.22E-01
1.84E+06	2.23E+01	-	-	-	3.79E+01	-	-	-	1.25E+01	-	-	-
1.95E+06	2.70E+01	-	-	-	4.33E+01	-	-	-	1.69E+01	-	-	-
2.22E+06	3.18E+01	-	-	-	5.69E+01	-	-	-	1.62E+01	-	-	-
2.37E+06	3.34E+01	3.65E+01	3.50E+01	2.25E+00	6.77E+01	7.31E+01	7.04E+01	3.83E+00	1.20E+01	1.55E+01	1.38E+01	2.45E+00



$V_s$ (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
3.70E-02	9.50E-02	6.60E-02	4.10E-02	3.80E-03	1.08E-02	7.30E-03	4.90E-03
1.12E-01	-	-	-	1.15E-02	-	-	-
1.29E-01	-	-	-	1.22E-02	-	-	-
1.46E-01	-	-	-	1.27E-02	-	-	-
1.63E-01	-	-	-	1.32E-02	-	-	-
1.80E-01	1.97E-01	1.89E-01	1.20E-02	1.35E-02	1.39E-02	1.37E-02	2.83E-04
2.38E-01	-	-	-	1.90E-02	-	-	-
2.48E-01	-	-	-	1.47E-02	-	-	-
3.82E-01	-	-	-	2.36E-02	-	-	-
5.23E-01	5.57E-01	5.40E-01	2.40E-02	4.34E-02	4.00E-02	4.17E-02	2.40E-03

30. Data of slip velocity for H5690S at temperature of 170 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c = 33.36$   $1/d_c = 1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.967mm Length 13.77mm  $l_c/d_c = 7.00$   $1/d_c = 0.51\text{mm}^{-1}$

(Figures 3.75 b, 3.83)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die214				$\gamma_a$ (1/s) Die 614				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
4.41E+05	4.77E+00	6.36E+00	2.87E+00	3.18E+00	8.12E+00	1.08E+01	9.48E+00	1.92E+00	2.68E+00	3.58E+00	3.13E+00	6.36E-01
8.66E+05	1.11E+01	-	-	-	1.62E+01	-	-	-	7.93E+00	-	-	-
1.15E+06	1.75E+01	-	-	-	2.71E+01	-	-	-	1.15E+01	-	-	-
1.35E+06	2.23E+01	-	-	-	3.25E+01	-	-	-	1.59E+01	-	-	-
1.66E+06	3.02E+01	2.86E+01	2.94E+01	1.12E+00	4.33E+01	4.60E+01	4.47E+01	1.92E+00	2.20E+01	1.78E+01	1.99E+01	3.01E+00
1.77E+06	3.34E+01	-	-	-	4.87E+01	-	-	-	2.38E+01	-	-	-
1.88E+06	3.66E+01	-	-	-	5.41E+01	-	-	-	2.56E+01	-	-	-
1.98E+06	3.81E+01	-	-	-	5.96E+01	-	-	-	2.48E+01	-	-	-
2.05E+06	3.97E+01	4.13E+01	4.05E+01	1.12E+00	6.50E+01	7.04E+01	6.77E+01	3.83E+00	2.40E+01	2.32E+01	2.36E+01	5.51E-01

$V_s$ (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
5.11E-02	6.80E-02	5.96E-02	1.19E-02	1.90E-02	1.90E-02	1.90E-02	0.00E+00
7.80E-02	-	-	-	9.80E-03	-	-	-
1.46E-01	-	-	-	1.27E-02	-	-	-
1.56E-01	-	-	-	9.80E-03	-	-	-
2.00E-01	2.65E-01	2.33E-01	4.59E-02	9.10E-03	1.50E-02	1.21E-02	4.17E-03
2.34E-01	-	-	-	9.80E-03	-	-	-
2.68E-01	-	-	-	1.00E-02	-	-	-
3.26E-01	-	-	-	1.03E-01	-	-	-
3.85E-01	4.43E-01	4.14E-01	4.10E-02	1.60E-02	1.90E-02	1.75E-02	2.12E-03

31. Data of slip velocity for H5690S at temperature of 190 °C

Capillary no.614 Diameter 0.7525 mm Length 25.10 mm  $l_c/d_c=33.36$   $1/d_c=1.33 \text{ mm}^{-1}$

Capillary no.214 Diameter 1.967 mm Length 13.77 mm  $l_c/d_c=7.00$   $1/d_c=0.51 \text{ mm}^{-1}$

(Figures 3.75 a, 3.84)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die 214				$\gamma_a$ (1/s) Die 614				$\gamma_{a,s}$ (1/s)			
	No. 1	No. 2	Average	S.D	No. 1	No. 2	Average	S.D	NO. 1	No. 2	Average	S.D
1.03E+06	1.91E+01	2.07E+01	1.99E+01	1.12E+00	2.71E+01	2.98E+01	2.84E+01	1.92E+00	1.41E+01	1.52E+01	1.46E+01	7.60E-01
1.36E+06	3.02E+01	-	-	-	4.06E+01	-	-	-	2.37E+01	-	-	-
1.55E+06	3.66E+01	-	-	-	5.41E+01	-	-	-	2.56E+01	-	-	-
1.74E+06	4.45E+01	4.77E+01	4.61E+01	2.25E+00	6.77E+01	6.50E+01	6.63E+01	1.92E+00	3.01E+01	3.73E+01	3.37E+01	5.08E+00
1.91E+06	5.09E+01	-	-	-	8.12E+01	-	-	-	3.20E+01	-	-	-
2.03E+06	5.56E+01	-	-	-	9.47E+01	-	-	-	3.13E+01	-	-	-
2.16E+06	6.36E+01	-	-	-	1.08E+02	-	-	-	3.58E+01	-	-	-
2.25E+06	7.15E+01	6.99E+01	7.07E+01	1.12E+00	1.22E+02	1.14E+02	1.18E+02	5.75E+00	4.02E+01	4.36E+01	4.19E+01	2.35E+00

$V_s$ (cm/s)				b (cm)			
No. 1	No. 2	Average	S.D	No. 1	No. 2	Average	S.D
1.22E-01	1.37E-01	1.30E-01	1.10E-02	8.66E-04	9.03E-04	8.84E-03	2.61E-04
1.59E-01	-	-	-	6.71E-04	-	-	-
2.68E-01	-	-	-	1.05E-03	-	-	-
3.53E-01	2.61E-01	3.07E-01	6.50E-02	1.17E-03	7.01E-04	9.36E-03	3.32E-03
4.63E-01	-	-	-	1.45E-03	-	-	-
5.96E-01	-	-	-	1.90E-03	-	-	-
6.82E-01	-	-	-	1.91E-03	-	-	-
7.67E-01	6.59E-01	7.13E-01	7.60E-02	1.91E-03	1.51E-03	1.71E-02	2.83E-03

32. Data of slip velocity for H5690S at temperature of 210 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c=33.36$   $1/d_c=1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.97mm Length 13.77mm  $l_c/d_c=7.00$   $1/d_c=7.00\text{mm}^{-1}$

(Figures 3.75 b, 3.85)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\dot{\gamma}_a$ (1/s) Die 214				$\dot{\gamma}_a$ (1/s) Die 614				$\dot{\gamma}_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.03E+06	2.86E+01	3.02E+01	2.94E+01	1.13E+00	3.52E+01	3.25E+01	3.39E+01	1.91E+00	2.45E+01	2.88E+01	2.67E+01	3.04E+00
1.13E+06	3.34E+01	-	-	-	4.06E+01	-	-	-	2.89E+01	-	-	-
1.35E+06	3.97E+01	-	-	-	5.41E+01	-	-	-	3.08E+01	-	-	-
1.53E+06	4.77E+01	-	-	-	6.77E+01	-	-	-	3.52E+01	-	-	-
1.71E+06	5.72E+01	5.88E+01	5.80E+01	1.12E+00	8.12E+01	8.66E+01	8.39E+01	3.83E+00	4.23E+01	4.15E+01	4.19E+01	5.59E-01
1.81E+06	6.04E+01	-	-	-	9.47E+01	-	-	-	3.90E+01	-	-	-
1.93E+06	6.83E+01	-	-	-	1.08E+02	-	-	-	4.35E+01	-	-	-
2.07E+06	7.63E+01	7.95E+01	7.79E+01	2.25E+00	1.22E+02	1.27E+02	1.25E+02	3.83E+00	4.79E+01	4.97E+01	4.88E+01	1.27E+00

V <sub>s</sub> (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.00E-01	3.50E-02	6.75E-02	4.59E-02	4.00E-03	1.20E-03	2.60E-03	1.97E-03
1.10E-01	-	-	-	3.80E-03	-	-	-
2.20E-01	-	-	-	7.20E-03	-	-	-
3.05E-01	-	-	-	8.60E-03	-	-	-
3.66E-01	4.24E-01	3.95E-01	4.10E-02	8.60E-03	1.02E-02	9.40E-03	1.13E-03
5.24E-01	-	-	-	1.30E-02	-	-	-
6.09E-01	-	-	-	1.40E-02	-	-	-
6.94E-01	7.28E-01	7.11E-01	2.40E-02	1.40E-02	1.46E-02	1.43E-02	4.24E-04

33. Data of slip velocity for H5690S at temperature of 230 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c=33.36$   $1/d_c=1.33 \text{ mm}^{-1}$

Capillary no.214 Diameter 1.967mm Length 13.77mm  $l_c/d_c=7.00$   $1/d_c=0.51 \text{ mm}^{-1}$

(Figures 3.75 a, 3.86)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die 214				$\gamma_a$ (1/s) Die 614				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.13E+06	4.13E+01	4.45E+01	4.29E+01	2.26E+00	5.41E+01	5.14E+01	5.28E+01	1.89E+00	3.33E+01	4.02E+01	3.67E+01	4.86E+00
1.30E+06	4.93E+01	5.08E+01	5.01E+01	1.09E+00	6.77E+01	6.50E+01	6.63E+01	1.93E+00	3.78E+01	4.21E+01	3.99E+01	3.01E+00
1.40E+06	5.72E+01	5.56E+01	5.64E+01	1.12E+00	8.12E+01	7.31E+01	7.71E+01	5.74E+00	4.23E+01	4.43E+01	4.35E+01	1.73E+00
1.57E+06	6.99E+01	7.31E+01	7.15E+01	2.25E+00	9.47E+01	9.75E+01	9.61E+01	1.91E+00	5.45E+01	5.79E+01	5.62E+01	2.45E+00
1.69E+06	7.95E+01	-	-	-	1.08E+02	-	-	-	6.15E+01	-	-	-
1.79E+06	8.90E+01	-	-	-	1.22E+02	-	-	-	6.86E+01	-	-	-
1.89E+06	9.54E+01	9.85E+01	9.69E+01	2.24E+00	1.35E+02	1.38E+02	1.37E+02	1.91E+00	7.05E+01	7.39E+01	7.22E+01	2.45E+00
2.00E+06	1.05E+02	-	-	-	1.49E+02	-	-	-	7.75E+01	-	-	-
2.09E+06	1.11E+02	-	-	-	1.62E+02	-	-	-	7.94E+01	-	-	-
2.16E+06	1.16E+02	1.18E+02	1.17E+02	1.12E+00	1.76E+02	1.81E+02	1.79E+02	3.83E+00	7.87E+01	7.79E+01	7.83E+01	5.59E-01



V <sub>s</sub> (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.96E-01	1.06E-01	1.51E-01	6.37E-02	5.86E-03	2.63E-03	4.25E-03	2.28E-03
2.81E-01	2.15E-01	2.48E-01	4.67E-02	7.43E-03	5.11E-03	6.27E-03	1.64E-03
3.66E-01	2.66E-01	3.16E-01	7.07E-02	8.66E-03	5.94E-03	7.30E-03	1.92E-03
3.78E-01	3.71E-01	3.75E-01	4.81E-03	6.95E-03	6.41E-03	6.68E-03	3.82E-04
4.39E-01	-	-	-	7.14E-03	-	-	-
5.01E-01	-	-	-	7.30E-03	-	-	-
6.10E-01	6.03E-01	6.06E-01	4.95E-03	8.65E-03	8.15E-03	8.40E-03	3.53E-04
6.71E-01	-	-	-	8.66E-03	-	-	-
7.80E-01	-	-	-	9.83E-03	-	-	-
9.18E-01	9.72E-01	9.45E-01	3.85E-02	1.17E-02	1.25E-02	1.21E-02	5.66E-04

34. Data of slip velocity for H6205JU at temperature of 190 °C

Capillary no.614 Diameter 0.7525mm Length 25.10mm  $l_c/d_c=33.36$   $1/d_c=1.33\text{mm}^{-1}$

Capillary no.214 Diameter 1.97mm Length 13.77mm  $l_c/d_c=7.00$   $1/d_c=0.51\text{mm}^{-1}$

(Figures 3.88, 3.95)

$\tau_w$ (dyn/cm <sup>2</sup> )	$\gamma_a$ (1/s) Die614				$\gamma_a$ (1/s) Die 214				$\gamma_{a,s}$ (1/s)			
	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
1.08E+06	1.89E+02	2.03E+02	1.96E+02	9.90E+00	1.64E+02	1.67E+02	1.66E+02	2.12E+00	1.48E+02	1.44E+02	1.46E+02	2.83E+00
1.21E+06	2.30E+02	-	-	-	1.95E+02	-	-	-	1.74E+02	-	-	-
1.25E+06	2.44E+02	-	-	-	2.02E+02	-	-	-	1.76E+02	-	-	-
1.31E+06	2.71E+02	2.90E+02	2.81E+02	1.34E+01	2.18E+02	2.21E+02	2.20E+02	2.12E+00	1.85E+02	1.78E+02	1.82E+02	4.95E+00
1.34E+06	2.84E+02	-	-	-	2.27E+02	-	-	-	1.92E+02	-	-	-
1.37E+06	2.98E+02	-	-	-	2.34E+02	-	-	-	1.94E+02	-	-	-
1.40E+06	3.11E+02	-	-	-	2.43E+02	-	-	-	2.01E+02	-	-	-
1.50E+06	3.52E+02	3.68E+02	3.60E+02	1.13E+01	2.75E+02	2.76E+02	2.76E+02	7.07E-01	2.27E+02	2.19E+02	2.23E+02	5.66E+00

V <sub>s</sub> (cm/s)				b (cm)			
No.1	No.2	Average	S.D	No.1	No.2	Average	S.D
3.94E-01	5.51E-01	4.73E-01	1.11E-01	2.66E-03	3.80E-03	3.23E-03	8.06E-04
5.28E-01	-	-	-	3.00E-03	-	-	-
6.38E-01	-	-	-	3.60E-03	-	-	-
8.08E-01	1.05E+00	9.29E-01	1.71E-01	4.30E-03	5.89E-03	5.05E-03	1.06E-03
8.69E-01	-	-	-	4.50E-03	-	-	-
9.79E-01	-	-	-	5.05E-03	-	-	-
1.04E+00	-	-	-	5.17E-03	-	-	-
1.17E+00	1.40E+00	1.29E+00	1.63E-01	5.17E-03	6.36E-03	5.77E-03	8.41E-04

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