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APPENDICES

Rheological Data

The measurement were performed by a Fluid Rheometer (Rheometric, ARES) using cone-and-plate geometry with a cone angle of 0.04 rad and a diameter of 50 mm. The gap range was 0.051 ± 1 mm and the temperature was set at 26 ± 1 °C. In the dynamic strain sweep default test, the experiments were carried out at the frequency of 1.0 rad/s. Initial strain and final strain were equal to 0.1 and 200%, respectively. In this experiments levels of strain were chosen in order to ensure that all subsequent measurements were made within the linear viscoelastic regime.

In the dynamic frequency sweep default test, initial and final frequency were equal to 100 and 0.1 rad/s, respectively. In the steady rate sweep default test, initial and final rates were equal to 0.01 to 100 s^{-1} . The data mode was time based. Time delay and measurement times were 0.1 and 1 sec respectively. The direction was clockwise, only one direction per measurement.

I1 Data for plot of zero shear viscosity vs aging time (Figure 4.2)

η_0 (P)								
Time (day)	MUC32:FA - 1:2				MUC32 : FA - 1 : 4			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean
1	720.000	500.000	155.563	610.000	500.000	280.000	155.563	390.000
4	800.000	700.000	70.711	750.000	780.000	600.000	127.279	690.000
7	900.000	850.000	35.355	875.000	1200.000	1000.000	141.421	1100.000
14	800.000	700.000	70.711	750.000	1100.000	1200.000	70.711	1150.000
17	750.000	700.000	35.355	725.000	1100.000	1200.000	70.711	1150.000
21	750.000	700.000	35.355	725.000	1100.000	1200.000	70.711	1150.000

η_0 (P)								
Time (day)	MUC32 : FA - 1 : 6				MUC32 : FA - 1 : 8			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean
1	1500.000	1600.000	70.711	1550.000	1900.000	1700.000	141.421	1800.000
4	1800.000	2000.000	141.421	1900.000	2300.000	2500.000	141.421	2400.000
7	2000.000	2200.000	141.421	2100.000	2500.000	2700.000	141.421	2600.000
14	1700.000	1800.000	70.711	1750.000	2100.000	2000.000	70.711	2050.000
17	1700.000	1800.000	70.711	1750.000	2100.000	2000.000	70.711	2050.000
21	1700.000	1800.000	70.711	1750.000	2100.000	2000.000	70.711	2050.000

I2 Data for plot of entanglement storage modulus vs aging time (Figure 4.4)

G_N^0 (dyn/cm ²)								
Time (day)	MUC32:FA - 1:2				MUC32 : FA - 1 : 4			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean
1	853.309	815.034	27.065	834.172	452.576	394.648	40.961	423.612
4	999.857	1039.270	27.869	1019.564	3517.420	3131.980	272.547	3324.700
7	821.828	1041.190	155.112	931.509	4143.670	4455.920	220.794	4299.795
14	762.837	756.778	4.284	759.808	6194.740	6486.920	206.602	6340.830
17	892.798	745.114	104.428	818.956	5914.670	5321.330	419.555	5618.000
21	624.646	775.152	106.424	699.899	5172.460	5293.010	85.242	5232.735

G_N^0 (dyn/cm ²)								
Time (day)	MUC32 : FA - 1 : 6				MUC32 : FA - 1 : 8			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean
1	25587.600	23833.600	1240.265	24710.600	26319.700	24065.800	1593.748	25192.750
4	27766.900	-	#DIV/0!	27766.900	28306.400	30009.500	1204.274	29157.950
7	20389.900	21517.100	797.051	20953.500	22978.600	22097.200	623.244	22537.900
14	24131.700	23025.100	782.484	23578.400	21989.700	20541.200	1024.244	21265.450
17	19407.900	18745.800	468.175	19076.850	18948.400	19413.000	328.522	19180.700
21	18079.700	17138.300	665.670	17609.000	18529.200	16733.100	1270.034	17631.150

I3 Data for plot of Bingham stress against aging time (Figure 4.5)

τ_B (dyn/cm ²)								
Time (day)	MUC32:FA - 1:2				MUC32 : FA - 1 : 4			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean
1	45.000	48.000	2.121	46.500	32.000	40.000	5.657	36.000
4	50.000	52.000	1.414	51.000	85.000	92.000	4.950	88.500
7	52.000	55.000	2.121	53.500	110.000	140.000	21.213	125.000
14	48.000	52.000	2.828	50.000	130.000	140.000	7.071	135.000
17	46.000	52.000	4.243	49.000	130.000	140.000	7.071	135.000
21	46.000	52.000	4.243	49.000	130.000	140.000	7.071	135.000

τ_B (dyn/cm ²)								
Time (day)	MUC32 : FA - 1 : 6				MUC32 : FA - 1 : 8			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean
1	250.000	290.000	28.284	270.000	300.000	315.000	10.607	307.500
4	280.000	300.000	14.142	290.000	320.000	322.000	1.414	321.000
7	280.000	320.000	28.284	300.000	300.000	310.000	7.071	305.000
14	240.000	265.000	17.678	252.500	260.000	280.000	14.142	270.000
17	240.000	265.000	17.678	252.500	260.000	280.000	14.142	270.000
21	240.000	265.000	17.678	252.500	260.000	280.000	14.142	270.000

I4 Data for η_0 vs fatty alcohol concentration at equilibrium.**(Figure 4.8)**

Fatty Alcohol (%wt)	η_0 (P)			
	set 1	set 2	std.	mean
2	750.000	700.000	35.355	725.00
4	1100.000	1200.000	70.711	1150.00
6	1700.000	1800.000	70.711	1750.00
8	2100.000	2000.000	70.711	2050.00

I5 Data for G_N^0 vs fatty alcohol concentration at equilibrium.**(Figure 4.9)**

Fatty Alcohol (%wt)	G_N^0 (dyn/cm ²)			
	set 1	set 2	std.	mean
2	624.646	775.152	106.424	699.899
4	5172.460	5293.010	85.242	5232.735
6	18079.700	17138.300	665.670	17609.000
8	18529.200	16733.100	1270.034	17631.150

I6 Data for τ_B vs fatty alcohol concentration at equilibrium.**(Figure 4.10)**

Fatty Alcohol (%wt)	τ_B (dyn/cm ²)			
	set 1	set 2	std.	mean
2	46.000	52.000	4.243	49.000
4	130.000	140.000	7.071	135.000
6	240.000	265.000	17.678	252.500
8	260.000	280.000	14.142	270.000

16 Data for η_a vs temperatures at equilibrium. (Figure 4.13)

Fatty Alcohol (%wt)	η_a (P)											
	26°C				35°C				55°C			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean	set 1	set 2	std.	mean
2	750.000	700.000	35.355	725.000	620.000	700.000	56.569	660.000	600.000	620.000	14.142	610.000
4	1100.000	1200.000	70.711	1150.000	900.000	920.000	14.142	910.000	700.000	740.000	28.284	720.000
6	1700.000	1800.000	70.711	1750.000	1900.000	2100.000	141.421	2000.000	1000.000	1100.000	70.711	1050.000
8	2100.000	2000.000	70.711	2050.000	2900.000	2700.000	141.421	2800.000	1800.000	1950.000	106.066	1875.000

17 Data for G_N^0 vs temperatures at equilibrium. (Figure 4.14)

Fatty Alcohol (%wt)	G_N^0 (dyn/cm ²)											
	26°C				35°C				55°C			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean	set 1	set 2	std.	mean
2	210.011	266.228	39.751	238.120	308.690	264.509	31.241	286.600	727.320	623.601	73.340	675.461
4	1867.830	1911.560	30.922	1889.695	1663.050	1831.480	119.098	1747.265	2407.040	2185.110	156.928	2296.075
6	6406.430	6237.530	119.430	6321.980	5855.510	6543.740	486.652	6199.625	7144.030	6804.300	240.225	6974.165
8	6931.590	6379.860	390.132	6655.725	6143.280	6109.100	24.169	6126.190	7419.720	7789.820	261.700	7604.770

18 Data for τ_a vs temperatures at equilibrium. (Figure 4.14)

Fatty Alcohol (%wt)	τ_a (dyn/cm ²)											
	26°C				35°C				55°C			
	set 1	set 2	std.	mean	set 1	set 2	std.	mean	set 1	set 2	std.	mean
2	46.000	52.000	4.243	49.000	34.000	38.000	2.828	36.000	28.000	30.000	1.414	29.000
4	130.000	140.000	7.071	135.000	100.000	110.000	7.071	105.000	75.000	80.000	3.536	77.500
6	240.000	265.000	17.678	252.500	230.000	255.000	17.678	242.500	190.000	175.000	10.607	182.500
8	260.000	280.000	14.142	270.000	250.000	252.000	1.414	251.000	200.000	205.000	3.536	202.500

I9 Data for η_0 vs pH at equilibrium. (Figure 4.20)

η_0 (P)				
MUC32 : FA = 1 : 2				
pH	set 1	set 2	std.	mean
5	40.000	35.000	3.536	37.500
7	53.671	35.955	12.527	44.813
8.7-9.2	750.000	700.000	35.355	725.000
10	11.157	15.562	3.115	13.360

η_0 (P)				
MUC32 : FA = 1 : 4				
pH	set 1	set 2	std.	mean
5	63.188	165.670	72.466	114.429
7	223.760	197.790	18.364	210.775
8.7-9.2	1100.000	1200.000	70.711	1150.000
10	189.390	96.830	65.450	143.110

η_0 (P)				
MUC32 : FA = 1 : 6				
pH	set 1	set 2	std.	mean
5	1308.500	1082.700	159.665	1195.600
7	2639.400	1726.400	645.588	2182.900
8.7-9.2	1700.000	1800.000	70.711	1750.000
10	1700.000	1800.000	70.711	1750.000

I10 Data for G_N^0 vs pH at equilibrium. (Figure 4.21)

$G_N^0(\text{dyn/cm}^2)$				
MUC32 : FA = 1 : 2				
pH	set 1	set 2	std.	mean
5	119.530	108.650	7.693	114.090
7	105.360	160.520	39.004	132.940
8.7-9.2	624.646	775.152	106.424	699.899
10	19.946	18.777	0.827	19.362

$G_N^0(\text{dyn/cm}^2)$				
MUC32 : FA = 1 : 4				
pH	set 1	set 2	std.	mean
5	350.650	222.890	90.340	286.770
7	395.170	344.590	35.765	369.880
8.7-9.2	5172.460	5293.010	85.242	5232.735
10	211.730	166.920	31.685	189.325

$G_N^0(\text{dyn/cm}^2)$				
MUC32 : FA = 1 : 6				
pH	set 1	set 2	std.	mean
5	472.930	360.620	79.415	416.775
7	584.030	561.020	16.271	572.525
8.7-9.2	18079.700	18529.200	317.844	18304.450
10	987.700	884.430	73.023	936.065

I11 Data for τ_B vs pH at equilibrium. (Figure 4.22)

$\tau_B(\text{dyn/cm}^2)$				
MUC32 : FA = 1 : 2				
pH	set 1	set 2	std.	mean
5	4.500	4.000	0.354	4.250
7	6.000	5.100	0.636	5.550
8.7-9.2	46.000	52.000	4.243	49.000
10	5.000	4.500	0.354	4.750

$\tau_B(\text{dyn/cm}^2)$				
MUC32 : FA = 1 : 4				
pH	set 1	set 2	std.	mean
5	12.5000	14.0000	1.0607	13.2500
7	20.0000	16.0000	2.8284	18.0000
8.7-9.2	130.0000	140.0000	7.0711	135.0000
10	15.0000	13.0000	1.4142	14.0000

$\tau_B(\text{dyn/cm}^2)$				
MUC32 : FA = 1 : 6				
pH	set 1	set 2	std.	mean
5	150.000	155.000	3.536	152.500
7	175.000	165.000	7.071	170.000
8.7-9.2	240.000	265.000	17.678	252.500
10	220.000	210.000	7.071	215.000

CURRICULUM VITAE

Name: Khin Thanda

Birth Date: July 3, 1972

Nationality: Myanmar

University Education:

1990–1995 B.Sc., Chemistry (Honor)

University of Yangon, Myanmar.