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APPENDICES

APPENDIX A

CALCULATION OF THE EXPERIMENT

1. Calculation for blow up ratio

The blow up ratio can be calculated by the following equation.

$$\text{Blow up ratio} = \frac{\text{bubble diameter}}{\text{die diameter}}$$

2. Calculation for crystallinity

The %crystallinity of the blown film which is calculated from total energy of heat of fusion by the following equation.

$$\% \text{crystallinity} = (\Delta H / \Delta H^0) * 100$$

where : ΔH^0 is the enthalpy of fusion for infinite HDPE crystal = 288 J.g⁻¹ [22]

ΔH is the enthalpy of fusion for sample



APPENDIX B

THE RESULT OF THE EXPERIMENT

Table A1 : Young's modulus of LLDPE/LDPE/HDPE blown film

Formula	Film direction	Young's Modulus of LLDPE/LDPE/HDPE blown films (Mpa)						
		#1	#2	#3	#4	#5	average	σ
zH000	MD	200.37	210.22	210.90	199.54	196.37	203.48	5.9
	TD	253.50	283.59	265.08	259.38	238.73	260.05	14.7
zH105	MD	215.72	195.35	214.91	192.64	200.97	203.92	9.7
	TD	270.47	255.31	264.91	270.66	278.13	267.90	7.6
zH110	MD	207.78	235.13	225.55	224.50	220.87	222.77	8.9
	TD	278.26	308.31	296.60	283.73	290.49	291.48	10.4
zH115	MD	272.78	226.10	258.17	277.91	294.05	265.80	22.9
	TD	331.29	342.30	316.18	332.55	363.71	337.21	15.7
zH120	MD	284.32	256.07	256.57	275.60	269.71	268.45	10.9
	TD	332.46	338.80	320.71	331.23	283.37	321.31	19.8
zH130	MD	309.40	301.62	319.07	304.70	314.18	309.79	6.3
	TD	401.78	432.71	413.03	379.25	392.87	403.93	18.1
zH205	MD	215.29	219.93	199.35	207.89	225.22	213.54	9.1
	TD	274.77	264.23	245.61	249.92	262.88	259.48	10.5
zH210	MD	226.19	246.59	235.91	250.16	239.45	239.66	8.4
	TD	327.92	246.33	295.12	307.97	316.61	298.79	28.3
zH215	MD	239.97	248.58	245.25	254.03	252.06	247.98	5.0
	TD	317.03	310.33	290.79	301.69	281.37	300.24	12.9
zH215.05	MD	224.10	199.33	261.52	282.78	242.08	241.96	28.9
	TD	267.78	300.59	278.60	287.22	293.33	285.50	11.4
zH215.25	MD	207.81	245.24	249.45	244.50	256.68	240.74	17.0
	TD	295.86	253.05	249.93	275.86	297.22	274.38	20.2
zH220	MD	301.15	272.17	263.70	288.12	282.63	281.55	12.9
	TD	381.18	354.80	350.77	365.19	341.94	358.78	13.5

Table A1 : Young's modulus of LLDPE/LDPE/HDPE blown film (cont.)

Formula	Film direction	Young's Modulus of LLDPE/LDPE/HDPE blown films (Mpa)						
		#1	#2	#3	#4	#5	average	σ
zH230	MD	340.91	329.03	320.26	312.00	317.27	323.89	10.1
	TD	421.87	388.11	355.49	368.24	394.60	385.66	22.9
mH000	MD	215.85	213.05	221.77	209.10	204.60	212.88	5.8
	TD	237.11	272.06	264.36	242.19	282.87	259.72	17.5
mH105	MD	242.25	232.17	251.35	235.54	233.66	238.99	7.1
	TD	315.89	318.23	317.74	304.78	301.45	311.62	7.1
mH110	MD	259.19	250.64	244.52	251.84	256.43	252.52	5.1
	TD	302.99	316.13	319.70	320.03	317.75	315.32	6.3
mH115	MD	251.75	273.80	234.15	259.57	231.75	250.21	15.8
	TD	316.43	328.90	319.22	328.16	322.06	322.95	4.9
mH120	MD	260.74	267.67	281.75	272.99	270.44	270.72	6.9
	TD	355.99	334.37	359.44	334.83	337.71	344.47	10.9
mH130	MD	346.87	349.14	357.25	334.92	355.37	348.71	7.9
	TD	450.65	425.97	434.57	390.51	417.73	423.89	19.9
mH205	MD	227.59	235.20	232.84	220.73	249.47	233.16	9.5
	TD	312.94	320.16	291.95	317.93	289.89	306.58	13.0
mH210	MD	243.93	263.44	252.52	230.14	255.70	249.15	11.4
	TD	294.49	239.22	297.25	302.87	294.70	285.71	23.4
mH215	MD	276.92	273.49	280.38	272.20	271.94	274.98	3.2
	TD	346.43	310.34	334.94	365.06	328.16	336.99	18.3
mH215.05	MD	267.76	276.41	272.64	252.69	274.39	268.78	8.5
	TD	345.18	310.77	341.76	315.46	285.75	319.78	21.8
mH215.25	MD	252.31	262.70	260.62	258.98	272.34	261.39	6.5
	TD	306.95	333.21	342.22	337.56	287.71	321.53	20.9
mH220	MD	310.70	293.30	294.21	297.25	303.43	299.78	6.5
	TD	365.25	350.73	339.83	365.27	335.47	351.31	12.4
mH230	MD	327.30	334.69	345.52	330.50	330.28	333.66	6.4
	TD	439.72	376.95	405.31	410.20	427.14	411.86	21.3

Table A2 : Tensile strength of LLDPE/LDPE/HDPE blown film

Formula	Film direction	Tensile strength of LLDPE/LDPE/HDPE blown films (Mpa)						
		#1	#2	#3	#4	#5	average	σ
zH000	MD	39.25	38.72	38.36	40.30	37.09	38.75	1.1
	TD	36.26	37.08	33.55	31.16	35.60	34.73	2.1
zH105	MD	39.60	41.08	40.86	38.56	41.61	40.34	1.1
	TD	35.68	34.50	36.66	33.82	34.08	34.95	1.1
zH110	MD	40.27	38.42	40.28	41.68	43.32	40.79	1.6
	TD	32.34	34.20	33.32	31.46	33.91	33.05	1.0
zH115	MD	41.45	43.81	40.28	44.49	41.65	42.34	1.6
	TD	29.79	32.44	31.95	34.59	31.26	32.01	1.6
zH120	MD	43.58	36.11	37.06	44.04	42.65	40.69	3.4
	TD	32.63	30.58	33.08	29.69	33.22	31.84	1.4
zH130	MD	42.34	42.97	44.22	44.54	41.71	43.16	1.1
	TD	31.51	29.52	33.66	29.42	32.15	31.25	1.6
zH205	MD	38.33	41.14	37.90	39.77	41.64	39.76	1.5
	TD	34.70	32.55	33.44	32.74	37.83	34.25	1.9
zH210	MD	37.97	38.12	41.51	42.88	39.46	39.99	1.9
	TD	32.71	34.87	32.52	31.23	36.96	33.66	2.0
zH215	MD	44.54	44.22	41.40	39.32	42.80	42.45	1.9
	TD	28.67	30.36	29.40	32.39	33.88	30.94	1.9
zH215.05	MD	46.35	43.99	44.22	42.01	45.84	44.48	1.5
	TD	34.95	37.61	32.98	35.18	33.23	34.79	1.7
zH215.25	MD	38.67	38.98	41.40	42.29	37.34	39.74	1.8
	TD	27.88	29.03	28.73	28.31	28.08	28.41	0.4
zH220	MD	41.31	43.88	41.82	42.39	40.03	41.89	1.3
	TD	32.14	27.40	30.18	34.54	27.20	30.29	2.8
zH230	MD	44.27	46.88	45.29	41.26	44.86	44.51	1.8
	TD	30.79	32.23	33.19	30.96	29.46	31.32	1.3

Table A2 : Tensile strength of LLDPE/LDPE/HDPE blown film (cont.)

Formula	Film direction	Tensile strength of LLDPE/LDPE/HDPE blown films (Mpa)						
		#1	#2	#3	#4	#5	average	σ
mH000	MD	43.53	48.72	47.75	43.48	42.18	45.13	2.6
	TD	41.29	42.65	42.38	39.19	42.75	41.65	1.3
mH105	MD	45.08	44.50	42.26	40.17	43.56	43.11	1.8
	TD	42.32	38.19	38.39	40.45	38.66	39.60	1.6
mH110	MD	45.95	43.73	47.08	46.61	44.33	45.54	1.3
	TD	35.27	39.24	33.89	37.15	36.31	36.37	1.8
mH115	MD	43.37	44.35	44.43	47.94	43.59	44.74	1.7
	TD	37.16	32.23	36.07	36.74	34.22	35.29	1.8
mH120	MD	46.73	48.51	42.37	47.98	45.61	46.24	2.2
	TD	35.98	34.69	34.27	38.63	37.62	36.24	1.7
mH130	MD	48.57	46.81	47.33	48.59	46.32	47.52	0.9
	TD	34.31	31.80	35.81	36.60	36.18	34.94	1.7
mH205	MD	41.76	45.81	41.43	45.29	46.85	44.23	2.2
	TD	43.20	39.72	41.73	35.96	42.71	40.66	2.6
mH210	MD	47.98	48.78	47.57	45.58	45.85	47.15	1.2
	TD	38.95	34.37	41.68	37.06	41.69	38.75	2.8
mH215	MD	45.08	45.64	48.88	46.82	48.43	46.97	1.5
	TD	40.43	38.75	39.95	37.21	38.30	38.93	1.2
mH215.05	MD	45.34	48.26	47.86	45.22	48.87	47.11	1.5
	TD	39.84	40.30	40.56	45.15	38.18	40.80	2.3
mH215.25	MD	42.70	40.22	43.57	37.94	39.25	40.73	2.1
	TD	33.80	32.52	29.00	31.88	31.67	31.77	1.6
mH220	MD	49.04	48.89	48.46	47.97	48.75	48.62	0.4
	TD	41.49	38.22	36.57	38.71	40.96	39.19	1.8
mH230	MD	50.21	51.36	48.55	45.42	52.15	49.54	2.4
	TD	35.06	31.95	37.09	38.01	36.20	35.66	2.1

Table A3 : Elongation at break of LLDPE/LDPE/HDPE blown film

Formula	Film direction	Elongation at break of LLDPE/LDPE/HDPE blown films (%)						
		#1	#2	#3	#4	#5	average	σ
zH000	MD	762.56	806.64	763.57	774.26	700.91	761.59	34.3
	TD	954.81	941.25	910.36	848.34	950.05	920.96	39.5
zH105	MD	745.12	711.11	732.47	692.01	772.45	730.63	27.7
	TD	985.17	986.90	953.83	906.25	988.86	964.20	31.7
zH110	MD	689.78	737.57	744.44	798.56	725.41	739.15	35.2
	TD	912.47	932.14	987.63	965.41	994.02	958.33	31.5
zH115	MD	731.85	740.65	640.12	730.79	655.94	699.87	42.8
	TD	855.12	923.45	894.56	945.65	871.42	898.04	33.1
zH120	MD	687.87	748.04	715.89	668.15	687.12	701.41	27.8
	TD	912.21	954.65	944.47	940.92	962.81	943.01	17.2
zH130	MD	721.45	701.23	695.59	687.87	717.22	704.67	12.8
	TD	900.73	948.55	958.34	912.25	939.20	931.81	21.9
zH205	MD	742.12	788.84	804.21	778.09	765.45	775.74	21.1
	TD	910.14	984.09	980.23	900.23	902.13	935.36	38.4
zH210	MD	646.15	812.56	665.18	754.31	756.65	726.97	62.1
	TD	899.96	969.03	871.58	852.25	948.10	908.18	44.3
zH215	MD	746.94	805.21	742.42	777.77	714.79	757.43	31.1
	TD	923.56	972.68	871.05	964.21	945.56	935.41	36.3
zH215.05	MD	739.20	781.15	739.38	781.96	754.02	759.14	19.1
	TD	959.24	1012.21	919.63	962.85	917.07	954.20	34.8
zH215.25	MD	744.38	744.57	701.81	781.79	789.57	752.42	31.4
	TD	915.53	974.86	944.34	924.75	903.54	932.60	25.0
zH220	MD	729.49	776.63	733.36	696.20	720.73	731.28	26.1
	TD	882.71	942.35	943.63	924.82	956.87	930.08	25.8
zH230	MD	716.73	759.45	782.70	752.77	728.21	747.97	23.4
	TD	950.59	858.32	923.01	868.75	908.52	901.84	34.2

Table A3 : Elongation at break of LLDPE/LDPE/HDPE blown film (cont.)

Formula	Film direction	Elongation at break of LLDPE/LDPE/HDPE blown films (%)						
		#1	#2	#3	#4	#5	average	σ
mH000	MD	700.83	737.63	732.11	718.43	720.99	722.00	12.7
	TD	876.28	896.43	880.12	861.02	884.53	879.68	11.5
mH105	MD	675.26	651.14	723.12	642.97	623.76	663.25	34.2
	TD	865.57	826.72	815.23	850.83	813.74	834.42	20.5
mH110	MD	713.56	691.91	652.51	608.96	657.09	664.81	35.9
	TD	808.39	858.63	806.20	825.17	834.45	826.57	19.2
mH115	MD	654.21	695.57	677.63	691.93	721.37	688.14	22.1
	TD	863.08	798.32	847.70	845.34	828.95	836.68	22.0
mH120	MD	632.36	630.88	618.78	695.02	667.39	648.89	28.2
	TD	859.88	863.99	852.33	810.21	785.41	834.36	31.1
mH130	MD	552.10	637.23	623.14	651.23	621.32	617.00	34.2
	TD	819.68	789.54	802.31	808.21	873.52	818.65	29.1
mH205	MD	740.81	687.45	665.01	674.99	705.09	694.67	26.7
	TD	897.21	826.40	883.45	815.54	893.48	863.22	35.0
mH210	MD	638.51	695.23	698.00	615.61	704.16	670.30	36.2
	TD	815.94	855.40	767.23	870.70	807.00	823.25	36.7
mH215	MD	690.30	674.67	702.41	668.14	731.73	693.45	22.6
	TD	858.91	895.62	832.56	885.74	897.78	874.12	25.0
mH215.05	MD	722.57	676.00	682.13	702.40	710.51	698.72	17.4
	TD	876.51	898.96	881.10	909.78	874.93	888.26	13.7
mH215.25	MD	676.22	748.49	655.16	654.20	718.92	690.60	37.3
	TD	895.32	880.22	806.86	875.99	850.16	861.71	31.0
mH220	MD	743.24	712.41	678.76	654.23	642.35	686.20	37.3
	TD	801.23	854.23	832.25	832.15	875.59	839.09	24.9
mH230	MD	685.23	610.82	666.36	630.00	652.29	648.94	26.2
	TD	823.08	870.75	842.13	837.77	844.22	843.59	15.5

Table A4 : Elmendorf tear of LLDPE/LDPE/HDPE blown film

Formula	Film direction	Elmendorf tear of LLDPE/LDPE/HDPE blown films (g)											
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	average	σ
zH000	MD	760	720	760	760	880	760	840	760	840	840	792	50.0
	TD	1920	2160	2160	1960	1920	2080	1840	2120	2080	2000	2024	106.1
zH105	MD	680	800	1000	680	600	720	920	680	680	680	744	118.9
	TD	2000	1960	1880	1920	1960	1920	2080	2040	2080	2200	2004	92.0
zH110	MD	600	680	800	540	720	640	560	600	920	800	686	116.6
	TD	2040	1920	2040	2040	2120	1960	2120	2000	2160	2080	2048	71.1
zH115	MD	640	640	600	720	600	560	640	680	560	680	632	50.0
	TD	2160	1840	1920	2240	1880	1880	2240	2000	2320	2160	2064	169.9
zH120	MD	400	600	520	520	640	520	480	440	440	520	508	69.4
	TD	2120	2080	2120	2240	1960	2360	1920	2320	1960	1920	2100	155.2
zH130	MD	560	560	360	680	280	480	480	320	400	360	448	119.7
	TD	2280	2040	2240	2040	2080	2240	1960	2080	2040	2240	2124	108.0
zH205	MD	800	600	680	720	720	720	600	760	640	600	684	68.0
	TD	2120	2200	2000	2200	1960	2040	2080	2080	2040	2160	2088	77.6
zH210	MD	560	560	600	600	760	560	680	560	480	600	596	72.6
	TD	2080	2080	2080	2360	2000	2320	2320	2240	2000	2280	2176	134.1
zH215	MD	520	480	640	600	640	520	560	560	480	560	556	55.0
	TD	2280	2280	2320	2240	2040	2160	2000	2000	2000	2200	2152	123.7
zH215.05	MD	640	720	640	640	600	600	640	600	600	720	640	43.8
	TD	2080	2040	1960	2080	2040	2080	2000	2120	2080	2000	2048	46.6
zH215.25	MD	480	440	440	480	400	400	320	360	320	360	400	56.6
	TD	2240	2360	2360	2400	2280	2160	2280	2160	2160	2200	2260	86.3
zH220	MD	480	440	400	480	480	480	440	400	440	480	452	31.2
	TD	2280	2160	2400	2320	2320	2240	2440	2320	2280	2440	2320	83.9
zH230	MD	280	280	280	240	280	280	280	240	280	280	272	16.0
	TD	2400	2320	2280	2280	2400	2280	2320	2360	2560	2600	2380	109.2

Table A4 : Elmendorf tear of LLDPE/LDPE/HDPE blown film (cont.)

Formula	Film direction	Elmendorf tear of LLDPE/LDPE/HDPE blown films (g)											
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	average	σ
mH000	MD	840	680	720	720	680	800	880	640	880	720	756	82.8
	TD	1960	2000	1760	1960	1880	1920	1880	1760	1880	1800	1880	80.0
mH105	MD	640	680	680	720	640	720	640	680	680	680	676	28.0
	TD	1840	2120	2120	1800	1800	2080	2240	1720	2080	2040	1984	168.0
mH110	MD	440	800	680	520	760	560	440	440	640	440	572	132.7
	TD	2280	2000	2320	2080	2160	2280	2040	2040	2080	2040	2132	113.2
mH115	MD	560	600	520	560	600	480	520	560	640	680	572	56.7
	TD	2240	2080	2160	2040	2160	2240	2240	2160	2240	2240	2180	69.9
mH120	MD	440	320	440	480	480	600	520	560	560	400	480	80.0
	TD	2000	1960	2000	2100	2120	2400	2320	2400	2240	2320	2186	162.0
mH130	MD	360	400	400	320	400	360	360	280	320	280	348	44.0
	TD	2240	2360	2240	2120	2080	2320	2280	2320	2320	2280	2256	86.2
mH205	MD	800	680	600	800	640	960	720	720	680	680	728	97.7
	TD	1920	2160	2160	1840	1880	2040	2560	1920	2040	1920	2044	202.0
mH210	MD	600	720	640	800	760	720	720	760	640	680	704	59.9
	TD	2080	2240	2080	2240	2280	2040	2040	2160	2040	2040	2124	92.0
mH215	MD	680	520	600	480	600	680	640	680	640	640	616	65.0
	TD	2080	2320	2400	2000	2000	2320	2360	2080	2400	2400	2236	164.4
mH215.05	MD	720	640	720	800	680	760	600	720	560	600	680	73.8
	TD	2320	2320	2280	2320	2240	2320	2080	2320	2160	2040	2240	102.8
mH215.25	MD	440	480	440	440	520	440	480	400	480	440	456	32.0
	TD	2400	2480	2280	2360	2360	2440	2360	2360	2280	2360	2368	58.8
mH220	MD	520	520	400	400	520	480	480	400	640	440	480	71.6
	TD	2200	2480	2240	2160	2560	2240	2480	2400	2520	2480	2376	142.2
mH230	MD	280	360	280	280	280	280	360	360	320	320	312	34.9
	TD	2520	2400	2600	2360	2320	2600	2600	2560	2600	2560	2512	104.0

Table A5 : Dart impact resistance of LLDPE/LDPE/HDPE blown film

Dart drop impact resistance of LLDPE/LDPE/HDPE blown films (g)			
Formula	average	Formula	average
zH000	375.0	zH000	375.0
zH105	338.0	zH105	338.0
zH110	310.6	zH110	310.6
zH115	292.8	zH115	292.8
zH120	249.6	zH120	249.6
zH130	155.0	zH130	155.0
zH205	350.5	zH205	350.5
zH210	347.0	zH210	347.0
zH215	231.5	zH215	231.5
zH215.05	371.5	zH215.05	371.5
zH215.25	308.5	zH215.25	308.5
zH220	319.5	zH220	319.5
zH230	206.0	zH230	206.0

Table A6 : Puncture resistance of LLDPE/LDPE/HDPE blown film

Formula	Puncture resistance of LLDPE/LDPE/HDPE blown films (N)						
	#1	#2	#3	#4	#5	average	σ
zH000	96.00	100.00	98.00	89.00	96.00	95.80	3.7
zH105	101.00	104.00	106.00	103.00	104.00	103.60	1.6
zH110	106.00	103.00	105.00	108.00	103.00	105.00	1.9
zH115	106.00	99.00	109.00	89.00	101.00	100.80	6.9
zH120	97.00	95.00	100.00	100.00	97.00	97.80	1.9
zH130	93.00	98.00	98.00	98.00	95.00	96.40	2.1
zH205	96.00	102.00	96.00	96.00	96.00	97.20	2.4
zH210	101.00	99.00	101.00	103.00	100.00	100.80	1.3
zH215	99.00	96.00	101.00	105.00	96.00	99.40	3.4
zH215.05	104.00	100.00	96.00	97.00	96.00	98.60	3.1
zH215.25	104.00	106.00	100.00	108.00	104.00	104.40	2.7
zH220	103.00	96.00	102.00	96.00	100.00	99.40	2.9
zH230	98.00	102.00	104.00	108.00	107.00	103.80	3.6
mH000	109.00	108.00	106.00	102.00	107.00	106.40	2.4
mH105	96.00	104.00	108.00	104.00	97.00	101.80	4.6
mH110	103.00	97.00	105.00	97.00	108.00	102.00	4.4
mH115	103.00	107.00	102.00	105.00	102.00	103.80	1.9
mH120	104.00	104.00	109.00	106.00	102.00	105.00	2.4
mH130	105.00	100.00	108.00	98.00	104.00	103.00	3.6
mH205	98.00	102.00	102.00	96.00	94.00	98.40	3.2
mH210	96.00	103.00	98.00	106.00	103.00	101.20	3.7
mH215	94.00	107.00	105.00	96.00	99.00	100.20	5.0
mH215.05	102.00	114.00	104.00	107.00	105.00	106.40	4.1
mH215.25	104.00	103.00	103.00	103.00	103.00	103.20	0.4
mH220	111.00	102.00	112.00	110.00	113.00	109.60	3.9
mH230	98.00	103.00	99.00	100.00	109.00	101.80	4.0

Table A7 : Haze of LLDPE/LDPE/HDPE blown film

Formula	Haze of LLDPE/LDPE/HDPE blown films (%)						
	#1	#2	#3	#4	#5	average	σ
zH000	12.4	11.0	12.2	12.0	10.9	11.7	0.6
zH105	18.6	19.4	19.2	19.3	18.9	19.1	0.3
zH110	22.9	22.6	21.9	22.5	22.2	22.4	0.3
zH115	24.3	23.8	24.2	23.0	24.9	24.0	0.6
zH120	24.2	27.5	24.3	24.2	23.8	24.8	1.4
zH130	29.6	29.1	28.7	28.1	28.7	28.8	0.5
zH205	15.1	14.5	13.5	14.3	14.6	14.4	0.5
zH210	15.2	15.9	16.3	14.0	15.4	15.4	0.8
zH215	15.2	16.8	16.2	17.1	15.6	16.2	0.7
zH215.05	16.6	16.5	15.9	16.5	17.4	16.6	0.5
zH215.25	14.1	13.4	15.3	14.1	13.4	14.1	0.7
zH220	18.6	17.8	18.2	18.3	18.5	18.3	0.3
zH230	23.6	20.0	21.3	22.7	22.7	22.1	1.3
mH000	16.2	15.9	14.0	15.3	15.8	15.4	0.8
mH105	17.6	17.3	17.9	17.1	18.1	17.6	0.4
mH110	21.3	19.9	18.7	19.3	20.9	20.0	1.0
mH115	22.5	21.6	22.1	21.5	22.4	22.0	0.4
mH120	23.8	24.7	23.2	22.1	24.0	23.6	0.9
mH130	30.4	30.9	30.6	30.2	29.3	30.3	0.5
mH205	15.8	14.6	15.2	15.4	16.3	15.5	0.6
mH210	15.8	16.8	16.9	17.3	15.9	16.5	0.6
mH215	17.2	17.9	17.8	18.6	17.3	17.8	0.5
mH215.05	17.4	16.9	18.5	17.6	18.2	17.7	0.6
mH215.25	15.6	15.9	14.9	14.7	15.1	15.2	0.4
mH220	22.5	23.1	23.5	21.5	22.4	22.6	0.7
mH230	24.1	24.6	24.9	23.1	26.3	24.6	1.0

Table A8 : Gloss of LLDPE/LDPE/HDPE blown film

Formula	Gloss of LLDPE/LDPE/HDPE blown films (%)						
	#1	#2	#3	#4	#5	average	σ
zH000	126.6	125.5	126.9	121.3	125.5	125.2	2.0
zH105	102.5	102.2	103.3	100.2	101.8	102.0	1.0
zH110	79.4	79.2	80.9	75.5	76.5	78.3	2.0
zH115	73.1	74.1	73.4	73.6	76.8	74.2	1.3
zH120	63.3	67.5	67.4	64.1	59.4	64.3	3.0
zH130	40.9	42.7	46.6	48.6	42.2	44.2	2.9
zH205	125.4	120.6	120.7	123.4	123.2	122.7	1.8
zH210	126.9	122.4	126.0	121.3	129.6	125.2	3.0
zH215	118.3	118.4	113.7	117.3	116.9	116.9	1.7
zH215.05	114.0	114.1	111.6	117.5	119.2	115.3	2.7
zH215.25	112.3	113.6	112.5	116.9	115.6	114.2	1.8
zH220	108.9	102.7	101.9	109.8	107.7	106.2	3.3
zH230	96.3	96.4	102.2	103.1	100.0	99.6	2.8
mH000	102.6	91.8	97.3	119.3	110.6	104.3	9.7
mH105	73.3	74.6	78.3	86.8	80.3	78.7	4.8
mH110	62.5	71.7	72.1	69.4	63.1	67.8	4.2
mH115	53.6	54.1	57.9	55.3	46.5	53.5	3.8
mH120	51.1	56.8	53.4	52.6	47.5	52.3	3.0
mH130	44.8	40.7	41.5	41.8	40.3	41.8	1.6
mH205	97.2	89.4	92.3	85.3	96.2	92.1	4.4
mH210	90.3	92.3	85.6	87.8	91.9	89.6	2.5
mH215	89.2	86.5	83.2	84.9	89.9	86.7	2.5
mH215.05	84.2	83.9	87.2	80.6	84.7	84.1	2.1
mH215.25	93.7	91.0	91.3	91.7	92.1	92.0	0.9
mH220	67.1	68.8	58.9	56.2	66.3	63.5	5.0
mH230	50.0	52.7	49.7	49.5	51.8	50.7	1.3

Table A9 : Initial seal temperature of LLDPE/LDPE/HDPE blown film

Formula	Initial seal temperature of LLDPE/LDPE/HDPE blown films (N/15mm)					
	110 °C	120 °C	125 °C	130 °C	135 °C	140 °C
zH000	0.00	2.95	14.75	17.77	18.20	19.95
zH205	0.00	3.22	13.96	16.56	18.95	20.93
zH210	0.00	1.40	2.08	15.66	18.75	19.09
zH215	0.00	0.00	1.09	2.64	17.82	18.25
zH215.05	0.00	0.00	0.00	4.77	17.85	18.82
zH215.25	0.00	0.00	1.74	17.10	17.54	19.96
zH220	0.00	0.00	0.00	1.88	17.29	19.49
zH230	0.00	0.00	0.00	0.00	1.45	18.51
mH000	0.00	2.09	14.63	15.05	15.23	17.19
mH205	0.00	1.93	14.66	14.05	17.51	19.80
mH210	0.00	0.00	2.65	8.25	17.70	19.85
mH215	0.00	0.00	1.79	2.47	16.21	20.57
mH215.05	0.00	0.00	1.55	2.42	15.76	18.21
mH215.25	0.00	0.00	1.92	12.55	14.01	21.73
mH220	0.00	0.00	1.39	1.70	3.82	20.39
mH230	0.00	0.00	0.00	0.00	2.31	19.50

Table A10 : DSC melting of LLDPE/LDPE/HDPE blown film

DSC melting of LLDPE/LDPE/HDPE blown films				
Formula	T onset (°C)	T peak(°C)	T end(°C)	Delta H
zH105	118.64	122.20	124.57	83.63
zH110	119.14	122.85	124.84	109.86
zH115	119.01	123.01	125.04	119.00
zH120	119.51	123.84	125.86	122.15
zH130	119.76	124.50	126.63	130.01
zH205	119.31	122.69	124.89	108.92
zH210	120.38	123.67	125.60	124.85
zH215	121.22	125.00	126.77	120.50
zH215.05	121.70	125.17	127.35	123.46
zH215.25	121.42	125.48	127.59	128.29
zH220	121.59	125.33	127.23	125.72
zH230	122.39	126.64	128.84	140.06
mH105	118.73	122.36	124.63	104.09
mH110	118.94	122.84	124.91	112.61
mH115	119.17	123.17	125.15	112.36
mH120	119.47	123.84	125.56	118.81
mH130	119.43	124.3	126.27	124.39
mH205	119.1	122.67	124.99	111.77
mH210	120.14	123.67	125.53	116.66
mH215	120.62	124.3	126.29	115.5
mH215.05	120.52	124.84	127.14	118.4
mH215.25	121.23	124.82	127.04	122.02
mH220	121.74	125.63	127.55	120.07
mH230	121.85	126.29	128.19	128.28

Formula	T Peak 1 (C°)	T Peak 2 (C°)
zH000	120.15	123.03
mH000	120.15	123.03

Table A11 : DSC cooling of LLDPE/LDPE/HDPE blown film

DSC cooling of LLDPE/LDPE/HDPE blown films				
Formula	T onset (C°)	T peak(C°)	T end(C°)	Delta H
zH000	110.14	108.52	105.95	111.43
zH105	113.65	111.33	108.21	105.62
zH110	114.81	112.51	109.36	115.05
zH115	115.20	113.01	109.75	119.02
zH120	115.75	113.53	110.39	124.24
zH130	116.65	114.71	111.95	132.78
zH205	114.00	111.66	109.02	110.74
zH210	115.46	113.34	110.70	113.50
zH215	116.60	114.52	111.80	115.52
zH215.05	116.77	114.69	111.94	118.19
zH215.25	117.16	115.04	112.19	123.51
zH220	117.01	115.06	112.39	129.64
zH230	118.21	116.42	113.74	139.33
mH000	111.03	109.57	107.4	107.87
mH105	113.73	111.69	108.78	108.58
mH110	114.58	112.53	109.46	116.05
mH115	115.26	113.19	110.21	117.88
mH120	115.88	113.87	110.97	124.36
mH130	116.36	114.40	111.53	129.31
mH205	113.97	111.87	109.31	116.01
mH210	115.13	113.07	110.57	121.33
mH215	115.90	113.90	111.22	120.01
mH215.05	116.47	114.55	111.43	121.60
mH215.25	116.31	114.39	111.61	125.72
mH220	117.00	115.10	112.46	126.80
mH230	117.78	115.95	113.39	131.72

VITAE

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