ANNEXURE A

Particle size and distribution profiles of Granulac® 200, Lactopress®, Flowlac® 100, Tablettose® 80, Starlac®, Cellactose® 80, and Microcelac® 100.

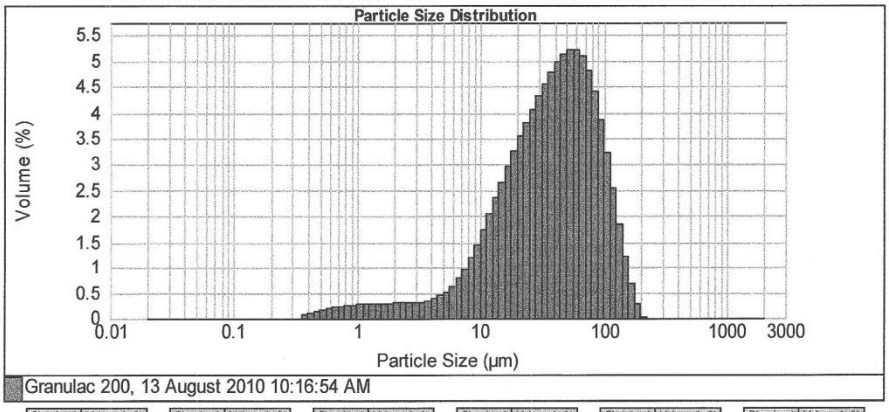
Table A-1: *Particle size analysis of Granulac® 200. Sample 1*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Granulac 200	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 10:16:54 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 10:16:55 AM	
Sample bulk lot ref: Sample 1	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 18.59 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.391 %	**Result Emulation:** Off
Concentration: 0.0315 %Vol	**Span :** 2.354	**Uniformity:** 0.735	**Result units:** Volume
Specific Surface Area: 0.472 m²/g	**Surface Weighted Mean D[3,2]:** 12.713 um	**Vol. Weighted Mean D[4,3]:** 47.485 um	

d(0.1): 8.982 um **d(0.5):** 38.540 um **d(0.9):** 99.709 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.26	7.096	0.97	50.238	5.22	355.656	0.00
0.022	0.00	0.159	0.00	1.125	0.27	7.962	1.20	56.368	5.21	399.052	0.00
0.025	0.00	0.178	0.00	1.262	0.27	8.934	1.45	63.246	5.08	447.744	0.00
0.028	0.00	0.200	0.00	1.416	0.28	10.024	1.74	70.963	4.82	502.377	0.00
0.032	0.00	0.224	0.00	1.589	0.28	11.247	2.04	79.621	4.41	563.677	0.00
0.036	0.00	0.252	0.00	1.783	0.28	12.619	2.35	89.337	3.87	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.29	14.159	2.67	100.237	3.24	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.29	15.887	2.97	112.468	2.55	796.214	0.00
0.050	0.00	0.356	0.07	2.518	0.29	17.825	3.27	126.191	1.86	893.367	0.00
0.056	0.00	0.399	0.10	2.825	0.30	20.000	3.54	141.589	1.22	1002.374	0.00
0.063	0.00	0.448	0.13	3.170	0.31	22.440	3.81	158.866	0.69	1124.683	0.00
0.071	0.00	0.502	0.16	3.557	0.34	25.179	4.06	178.250	0.26	1261.915	0.00
0.080	0.00	0.564	0.18	3.991	0.37	28.251	4.31	200.000	0.02	1415.892	0.00
0.089	0.00	0.632	0.21	4.477	0.43	31.698	4.54	224.404	0.00	1588.656	0.00
0.100	0.00	0.710	0.23	5.024	0.52	35.566	4.77	251.785	0.00	1782.502	0.00
0.112	0.00	0.796	0.24	5.637	0.63	39.905	4.97	282.508	0.00	2000.000	
0.126	0.00	0.893	0.25	6.325	0.78	44.774	5.13	316.979	0.00		
0.142		1.002		7.096		50.238		355.656			

Operator notes:

Malvern Instruments Ltd.
Malvern, UK
Tel: +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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16 Aug 2010 11:44:03 AM

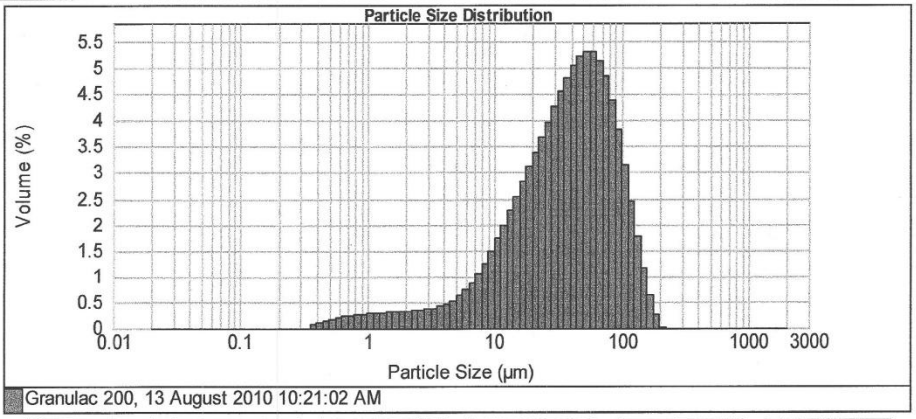
Table A-2: *Particle size analysis of Granulac® 200. Sample 2*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Granulac 200	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 10:21:02 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 10:21:03 AM	
Sample bulk lot ref: Sample 2	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 15.82 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.310 %	**Result Emulation:** Off
Concentration: 0.0255 %Vol	**Span :** 2.342	**Uniformity:** 0.73	**Result units:** Volume
Specific Surface Area: 0.488 m²/g	**Surface Weighted Mean D[3,2]:** 12.284 um	**Vol. Weighted Mean D[4,3]:** 46.945 um	

d(0.1): 8.166 um **d(0.5):** 38.500 um **d(0.9):** 98.350 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.27	7.096	1.05	50.238	5.32	355.656	0.00
0.022	0.00	0.159	0.00	1.125	0.28	7.962	1.25	56.368	5.30	399.052	0.00
0.025	0.00	0.178	0.00	1.262	0.29	8.934	1.48	63.246	5.14	447.744	0.00
0.028	0.00	0.200	0.00	1.416	0.30	10.024	1.73	70.963	4.84	502.377	0.00
0.032	0.00	0.224	0.00	1.589	0.30	11.247	1.99	79.621	4.38	563.677	0.00
0.036	0.00	0.252	0.00	1.783	0.31	12.619	2.26	89.337	3.81	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.32	14.159	2.54	100.237	3.15	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.33	15.887	2.82	112.468	2.44	796.214	0.00
0.050	0.00	0.356	0.07	2.518	0.34	17.825	3.10	126.191	1.77	893.367	0.00
0.056	0.00	0.399	0.10	2.825	0.35	20.000	3.38	141.589	1.14	1002.374	0.00
0.063	0.00	0.448	0.13	3.170	0.38	22.440	3.67	158.866	0.64	1124.683	0.00
0.071	0.00	0.502	0.16	3.557	0.41	25.179	3.96	178.250	0.25	1261.915	0.00
0.080	0.00	0.564	0.19	3.991	0.46	28.251	4.25	200.000	0.02	1415.892	0.00
0.089	0.00	0.632	0.21	4.477	0.53	31.698	4.54	224.404	0.00	1588.656	0.00
0.100	0.00	0.710	0.23	5.024	0.62	35.566	4.81	251.785	0.00	1782.502	0.00
0.112	0.00	0.796	0.25	5.637	0.73	39.905	5.05	282.508	0.00	2000.000	
0.126	0.00	0.893	0.26	6.325	0.88	44.774	5.23	316.979	0.00		
0.142		1.002		7.096		50.238		355.656			

Operator notes:

Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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Table A-3: *Particle size analysis of Lactopress®. Sample 1*

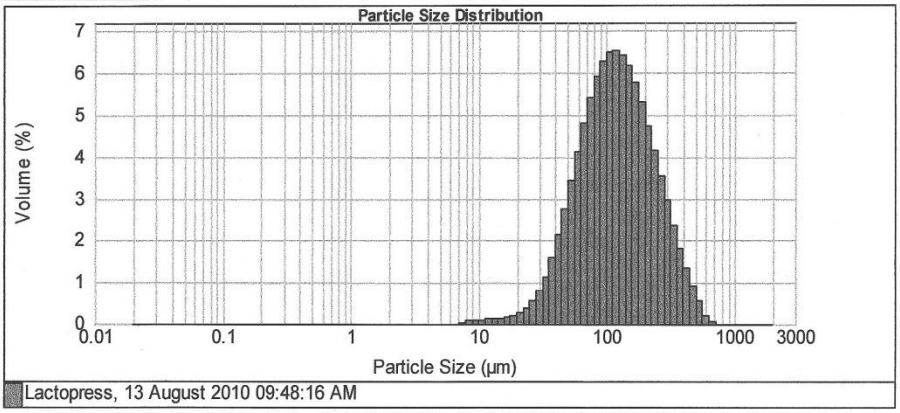
MALVERN INSTRUMENTS

MASTERSIZER 2000

Result Analysis Report

Sample Name: Lactopress	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 09:48:16 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 09:48:17 AM	
Sample bulk lot ref: Sample 1	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 17.21 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.653 %	**Result Emulation:** Off
Concentration: 0.2387 %Vol	**Span :** 1.995	**Uniformity:** 0.618	**Result units:** Volume
Specific Surface Area: 0.0663 m²/g	**Surface Weighted Mean D[3,2]:** 90.477 um	**Vol. Weighted Mean D[4,3]:** 146.429 um	

d(0.1): 48.998 um **d(0.5):** 118.312 um **d(0.9):** 284.991 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.03	50.238	3.43	355.656	1.83
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.08	56.368	4.12	399.052	1.34
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.09	63.246	4.80	447.744	0.91
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.10	70.963	5.41	502.377	0.57
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.12	79.621	5.92	563.677	0.21
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.13	89.337	6.29	632.456	0.07
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.14	100.237	6.50	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.16	112.468	6.54	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.20	126.191	6.42	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.26	141.589	6.16	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.38	158.866	5.78	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.55	178.250	5.29	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.80	200.000	4.75	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	1.15	224.404	4.16	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	1.59	251.785	3.55	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	2.13	282.508	2.95	2000.000	
0.126	0.00	0.893	0.00	6.325	0.00	44.774	2.74	316.979	2.37		
0.142		1.002		7.096		50.238		355.656			

Operator notes:

Malvern Instruments Ltd.
Malvern, UK
Tel: +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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Table A-4: *Particle size analysis of Lactopress®. Sample 2*

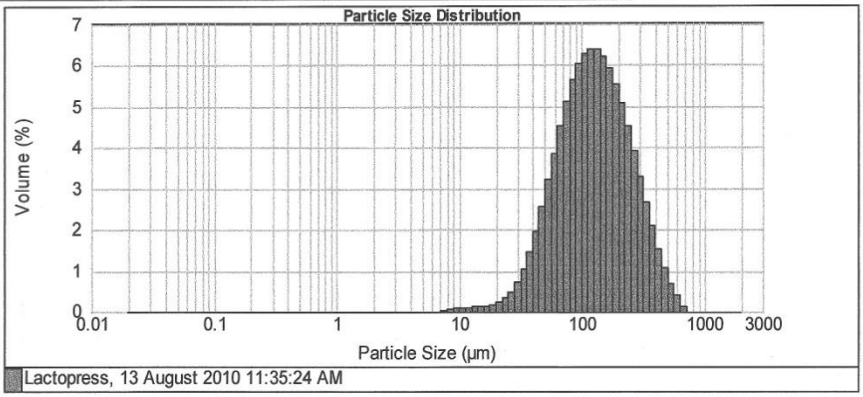
MALVERN INSTRUMENTS

MASTERSIZER 2000

Result Analysis Report

Sample Name: Lactopress	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 11:35:24 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 11:35:25 AM	
Sample bulk lot ref: Sample 2	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 14.53 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.741 %	**Result Emulation:** Off
Concentration: 0.2083 %Vol	**Span :** 2.003	**Uniformity:** 0.623	**Result units:** Volume
Specific Surface Area: 0.0632 m²/g	**Surface Weighted Mean D[3,2]:** 94.893 um	**Vol. Weighted Mean D[4,3]:** 154.364 um	

d(0.1): 50.945 um **d(0.5):** 124.724 um **d(0.9):** 300.744 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.03	50.238	3.20	355.656	2.08
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.07	56.368	3.86	399.052	1.54
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.08	63.246	4.52	447.744	1.08
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.09	70.963	5.12	502.377	0.69
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.10	79.621	5.63	563.677	0.40
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.11	89.337	6.02	632.456	0.12
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.12	100.237	6.27	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.14	112.468	6.38	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.17	126.191	6.36	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.22	141.589	6.20	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.32	158.866	5.92	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.48	178.250	5.54	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.72	200.000	5.06	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	1.04	224.404	4.51	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	1.45	251.785	3.91	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	1.96	282.508	3.29	2000.000	
0.126	0.00	0.893	0.00	6.325	0.00	44.774	2.54	316.979	2.66		
0.142	0.00	1.002	0.00	7.096	0.00	50.238		355.656			

Operator notes:

Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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16 Aug 2010 11:40:13 AM

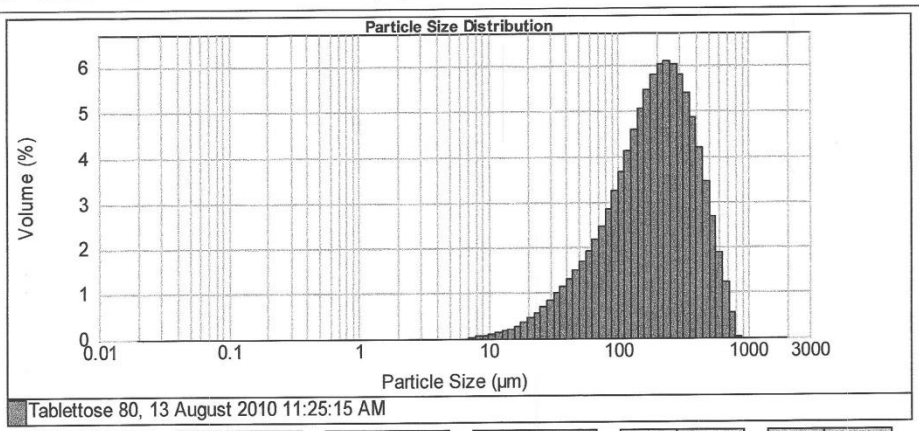
Table A-5: *Particle size analysis of Tablettose® 80. Sample 1*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Tablettose 80	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 11:25:15 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 11:25:16 AM	
Sample bulk lot ref: Sample 1	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 14.61 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 1.158 %	**Result Emulation:** Off
Concentration: 0.2560 %Vol	**Span :** 2.023	**Uniformity:** 0.619	**Result units:** Volume
Specific Surface Area: 0.0517 m²/g	**Surface Weighted Mean D[3,2]:** 115.990 um	**Vol. Weighted Mean D[4,3]:** 225.617 um	

d(0.1): 54.830 um **d(0.5):** 193.033 um **d(0.9):** 445.244 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.02	50.238	1.69	355.656	4.84
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.06	56.368	1.92	399.052	4.18
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.06	63.246	2.18	447.744	3.45
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.08	70.963	2.48	502.377	2.68
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.11	79.621	2.83	563.677	1.90
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.14	89.337	3.23	632.456	1.21
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.20	100.237	3.66	709.627	0.56
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.26	112.468	4.13	796.214	0.02
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.35	126.191	4.60	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.45	141.589	5.06	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.56	158.866	5.48	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.69	178.250	5.81	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.83	200.000	6.03	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	0.98	224.404	6.11	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	1.14	251.785	6.03	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	1.31	282.508	5.79	2000.000	
0.126	0.00	0.893	0.00	6.325	0.00	44.774	1.49	316.979	5.38		
0.142		1.002		7.096		50.238		355.656			

Operator notes:

Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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16 Aug 2010 11:50:59 AM

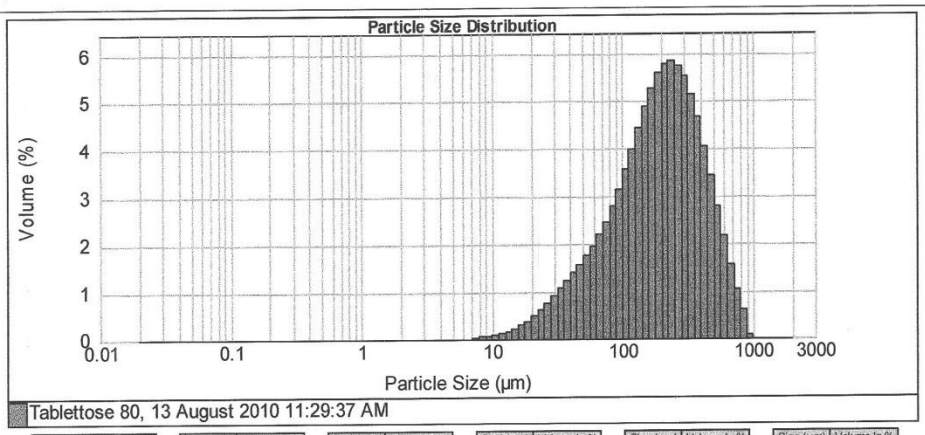
Table A-6: *Particle size analysis of Tablettose® 80. Sample 2*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Tablettose 80	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 11:29:37 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 11:29:38 AM	
Sample bulk lot ref: Sample 2	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 15.14 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 1.290 %	**Result Emulation:** Off
Concentration: 0.2606 %Vol	**Span :** 2.168	**Uniformity:** 0.665	**Result units:** Volume
Specific Surface Area: 0.0528 m²/g	**Surface Weighted Mean D[3,2]:** 113.732 um	**Vol. Weighted Mean D[4,3]:** 233.616 um	

d(0.1): 52.171 um **d(0.5):** 194.018 um **d(0.9):** 472.707 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.03	50.238	1.75	355.656	4.64
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.06	56.368	1.98	399.052	4.06
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.06	63.246	2.20	447.744	3.43
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.08	70.963	2.47	502.377	2.79
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.11	79.621	2.78	563.677	2.16
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.16	89.337	3.15	632.456	1.57
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.22	100.237	3.55	709.627	1.04
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.29	112.468	3.99	796.214	0.62
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.39	126.191	4.44	893.367	0.08
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.50	141.589	4.89	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.62	158.866	5.28	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.76	178.250	5.60	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.91	200.000	5.80	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	1.07	224.404	5.86	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	1.23	251.785	5.77	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	1.39	282.508	5.53	2000.000	
0.126	0.00	0.893	0.00	6.325	0.00	44.774	1.57	316.979	5.14		
0.142	0.00	1.002	0.00	7.096	0.00	50.238		355.656			

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Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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16 Aug 2010 11:51:06 AM

Table A-7: *Particle size analysis of Flowlac® 100. Sample 1*

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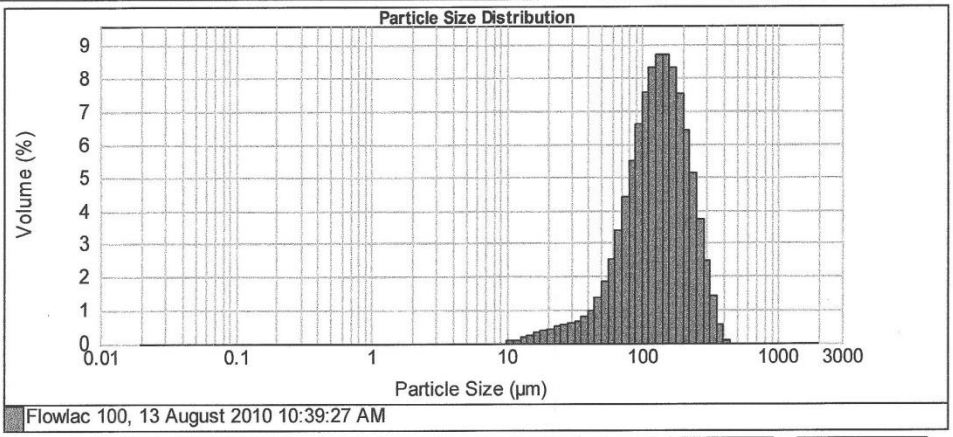
MASTERSIZER 2000

Result Analysis Report

Sample Name: Flowlac 100	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 10:39:27 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 10:39:28 AM	
Sample bulk lot ref: Sample 1	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 13.75 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.771 %	**Result Emulation:** Off
Concentration: 0.2070 %Vol	**Span :** 1.382	**Uniformity:** 0.43	**Result units:** Volume
Specific Surface Area: 0.0601 m²/g	**Surface Weighted Mean D[3,2]:** 99.887 um	**Vol. Weighted Mean D[4,3]:** 142.102 um	

d(0.1): 59.701 um **d(0.5):** 131.276 um **d(0.9):** 241.096 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.00	50.238	1.85	355.656	0.55
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.00	56.368	2.52	399.052	0.06
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.00	63.246	3.38	447.744	0.00
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.05	70.963	4.39	502.377	0.00
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.09	79.621	5.48	563.677	0.00
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.16	89.337	6.58	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.22	100.237	7.55	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.29	112.468	8.30	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.36	126.191	8.71	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.42	141.589	8.72	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.48	158.866	8.31	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.53	178.250	7.50	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.58	200.000	6.38	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	0.66	224.404	5.09	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	0.79	251.785	3.74	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	1.01	282.508	2.49	2000.000	
0.126	0.00	0.893	0.00	6.325	0.00	44.774	1.34	316.979	1.41		
0.142		1.002		7.096		50.238		355.656			

Operator notes:

Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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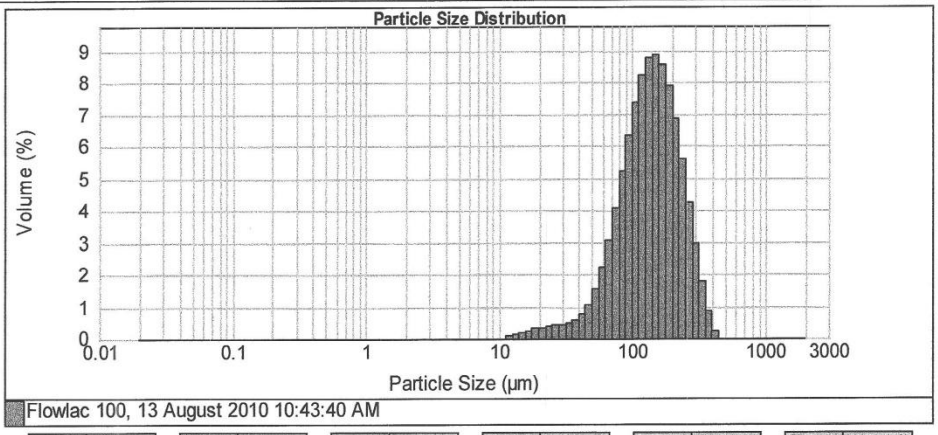
Table A-8: *Particle size analysis of Flowlac® 100. Sample 2*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Flowlac 100	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 10:43:40 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 10:43:41 AM	
Sample bulk lot ref: Sample 2	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 12.52 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.835 %	**Result Emulation:** Off
Concentration: 0.2022 %Vol	**Span :** 1.353	**Uniformity:** 0.42	**Result units:** Volume
Specific Surface Area: 0.0557 m²/g	**Surface Weighted Mean D[3,2]:** 107.681 um	**Vol. Weighted Mean D[4,3]:** 149.614 um	

d(0.1): 65.696 um **d(0.5):** 137.806 um **d(0.9):** 252.133 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.00	50.238	1.55	355.656	0.87
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.00	56.368	2.20	399.052	0.20
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.00	63.246	3.06	447.744	0.00
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.00	70.963	4.07	502.377	0.00
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.06	79.621	5.19	563.677	0.00
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.12	89.337	6.33	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.19	100.237	7.38	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.24	112.468	8.23	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.30	126.191	8.75	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.34	141.589	8.89	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.38	158.866	8.60	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.40	178.250	7.90	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.43	200.000	6.86	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	0.48	224.404	5.60	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	0.58	251.785	4.25	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	0.76	282.508	2.95	2000.000	
0.126	0.00	0.893	0.00	6.325	0.00	44.774	1.07	316.979	1.79		
0.142	0.00	1.002	0.00	7.096	0.00	50.238		355.656			

Operator notes:

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Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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16 Aug 2010 11:48:25 AM

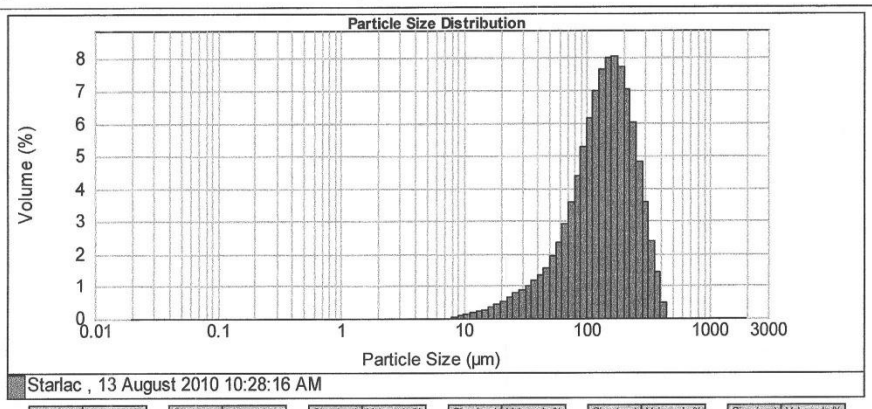
Table A-9: *Particle size analysis of Starlac®. Sample 1*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Starlac	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 10:28:16 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 10:28:17 AM	
Sample bulk lot ref: Sample 1	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 14.34 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.778 %	**Result Emulation:** Off
Concentration: 0.2097 %Vol	**Span :** 1.534	**Uniformity:** 0.467	**Result units:** Volume
Specific Surface Area: 0.0619 m²/g	**Surface Weighted Mean D[3,2]:** 96.882 um	**Vol. Weighted Mean D[4,3]:** 151.808 um	

d(0.1): 51.862 um **d(0.5):** 140.322 um **d(0.9):** 267.050 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.00	50.238	1.92	355.656	1.42
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.02	56.368	2.34	399.052	0.48
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.07	63.246	2.89	447.744	0.00
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.10	70.963	3.57	502.377	0.00
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.14	79.621	4.37	563.677	0.00
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.20	89.337	5.26	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.26	100.237	6.15	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.34	112.468	6.98	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.43	126.191	7.63	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.53	141.589	8.02	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.64	158.866	8.05	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.76	178.250	7.71	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.88	200.000	7.00	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	1.02	224.404	6.00	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	1.17	251.785	4.80	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	1.36	282.508	3.56	2000.000	
0.126	0.00	0.893	0.00	6.325	0.00	44.774	1.59	316.979	2.35		
0.142		1.002		7.096		50.238		355.656			

Operator notes:

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Malvern, UK
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16 Aug 2010 11:45:48 AM

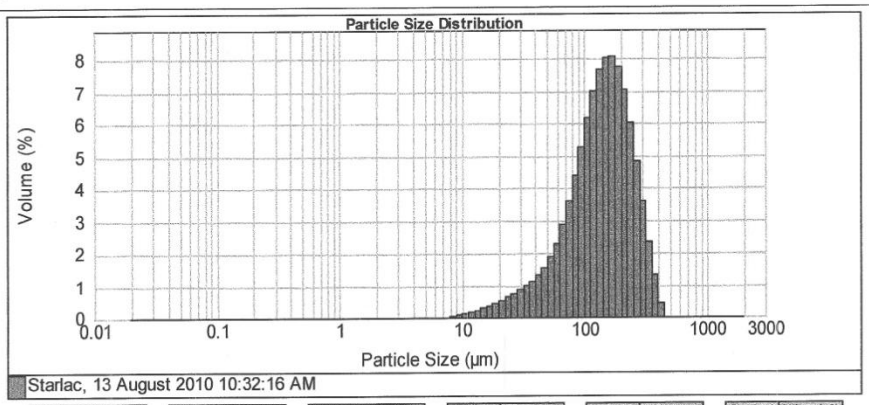
Table A-10: *Particle size analysis of Starlac®. Sample 2*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Starlac	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 10:32:16 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 10:32:17 AM	
Sample bulk lot ref: Sample 2	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 12.95 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.940 %	**Result Emulation:** Off
Concentration: 0.1877 %Vol	**Span :** 1.522	**Uniformity:** 0.464	**Result units:** Volume
Specific Surface Area: 0.062 m²/g	**Surface Weighted Mean D[3,2]:** 96.782 um	**Vol. Weighted Mean D[4,3]:** 151.736 um	

d(0.1): 52.301 um **d(0.5):** 140.550 um **d(0.9):** 266.205 um



Size (µm)	Volume In %
0.020	0.00
0.022	0.00
0.025	0.00
0.028	0.00
0.032	0.00
0.036	0.00
0.040	0.00
0.045	0.00
0.050	0.00
0.056	0.00
0.063	0.00
0.071	0.00
0.080	0.00
0.089	0.00
0.100	0.00
0.112	0.00
0.126	0.00
0.142	0.00

Size (µm)	Volume In %
0.142	0.00
0.159	0.00
0.178	0.00
0.200	0.00
0.224	0.00
0.252	0.00
0.283	0.00
0.317	0.00
0.356	0.00
0.399	0.00
0.448	0.00
0.502	0.00
0.564	0.00
0.632	0.00
0.710	0.00
0.796	0.00
0.893	0.00
1.002	0.00

Size (µm)	Volume In %
1.002	0.00
1.125	0.00
1.262	0.00
1.416	0.00
1.589	0.00
1.783	0.00
2.000	0.00
2.244	0.00
2.518	0.00
2.825	0.00
3.170	0.00
3.557	0.00
3.991	0.00
4.477	0.00
5.024	0.00
5.637	0.00
6.325	0.00
7.096	0.00

Size (µm)	Volume In %
7.096	0.00
7.962	0.02
8.934	0.08
10.024	0.11
11.247	0.16
12.619	0.21
14.159	0.27
15.887	0.35
17.825	0.44
20.000	0.53
22.440	0.63
25.179	0.74
28.251	0.86
31.698	0.98
35.566	1.13
39.905	1.32
44.774	1.56
50.238	

Size (µm)	Volume In %
50.238	1.88
56.368	2.31
63.246	2.88
70.963	3.56
79.621	4.38
89.337	5.27
100.237	6.17
112.468	7.01
126.191	7.66
141.589	8.05
158.866	8.09
178.250	7.75
200.000	7.05
224.404	6.05
251.785	4.84
282.508	3.58
316.979	2.34
355.656	

Size (µm)	Volume In %
355.656	1.33
399.052	0.40
447.744	0.00
502.377	0.00
563.677	0.00
632.456	0.00
709.627	0.00
796.214	0.00
893.387	0.00
1002.374	0.00
1124.683	0.00
1261.915	0.00
1415.892	0.00
1588.656	0.00
1782.502	0.00
2000.000	

Operator notes:

Malvern Instruments Ltd.
Malvern, UK
Tel: +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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16 Aug 2010 11:45:58 AM

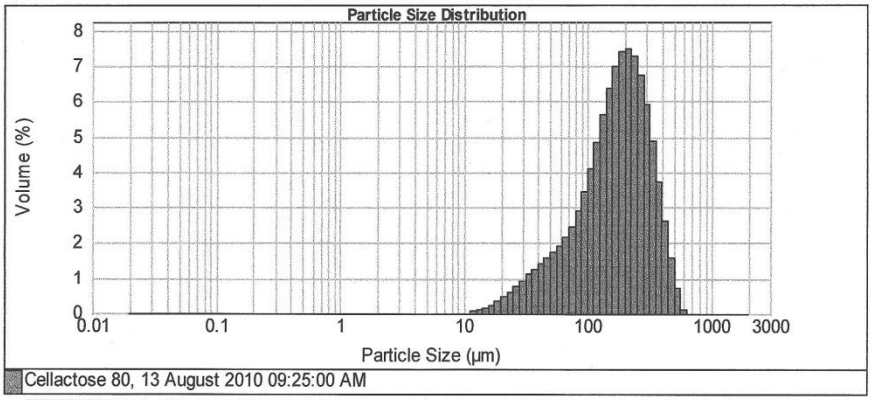
Table A-11: *Particle size analysis of Cellactose® 80. Sample 1*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Cellactose 80	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 09:25:00 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 09:25:01 AM	
Sample bulk lot ref: Sample 1	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 16.56 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 1.033 %	**Result Emulation:** Off
Concentration: 0.2857 %Vol	**Span :** 1.674	**Uniformity:** 0.511	**Result units:** Volume
Specific Surface Area: 0.0532 m²/g	**Surface Weighted Mean D[3,2]:** 112.678 um	**Vol. Weighted Mean D[4,3]:** 189.383 um	

d(0.1): 53.493 um **d(0.5):** 173.867 um **d(0.9):** 344.622 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.00	50.238	1.73	355.656	3.75
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.00	56.368	1.92	399.052	2.61
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.00	63.246	2.15	447.744	1.58
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.00	70.963	2.47	502.377	0.74
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.05	79.621	2.89	563.677	0.10
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.10	89.337	3.43	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.16	100.237	4.09	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.23	112.468	4.84	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.34	126.191	5.61	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.46	141.589	6.36	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.61	158.866	6.98	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.78	178.250	7.38	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.95	200.000	7.50	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	1.11	224.404	7.28	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	1.28	251.785	6.73	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	1.43	282.508	5.91	2000.000	0.00
0.126	0.00	0.893	0.00	6.325	0.00	44.774	1.58	316.979	4.87		
0.142	0.00	1.002	0.00	7.096	0.00	50.238	1.58	355.656	4.87		

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Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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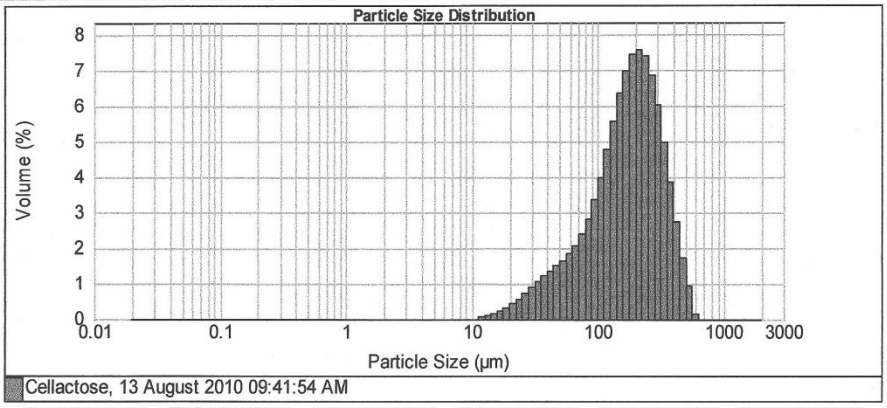
Table A-12: *Particle size analysis of Cellactose® 80. Sample 2*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Cellactose	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 09:41:54 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 09:41:55 AM	
Sample bulk lot ref: Sample 2	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 14.37 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 1.198 %	**Result Emulation:** Off
Concentration: 0.2515 %Vol	**Span :** 1.663	**Uniformity:** 0.507	**Result units:** Volume
Specific Surface Area: 0.0518 m²/g	**Surface Weighted Mean D[3,2]:** 115.724 um	**Vol. Weighted Mean D[4,3]:** 193.199 um	

d(0.1): 55.554 um **d(0.5):** 177.322 um **d(0.9):** 350.358 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.00	50.238	1.66	355.656	3.87
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.00	56.368	1.84	399.052	2.74
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.00	63.246	2.07	447.744	1.73
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.00	70.963	2.38	502.377	0.94
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.04	79.621	2.80	563.677	0.14
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.09	89.337	3.34	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.15	100.237	4.00	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.21	112.468	4.77	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.31	126.191	5.57	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.43	141.589	6.35	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.57	158.866	7.00	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.73	178.250	7.44	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.00	28.251	0.89	200.000	7.58	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.00	31.698	1.05	224.404	7.38	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.00	35.566	1.21	251.785	6.84	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.00	39.905	1.36	282.508	6.02	2000.000	
0.126	0.00	0.893	0.00	6.325	0.00	44.774	1.51	316.979	4.98		
0.142	0.00	1.002		7.096		50.238		355.656			

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Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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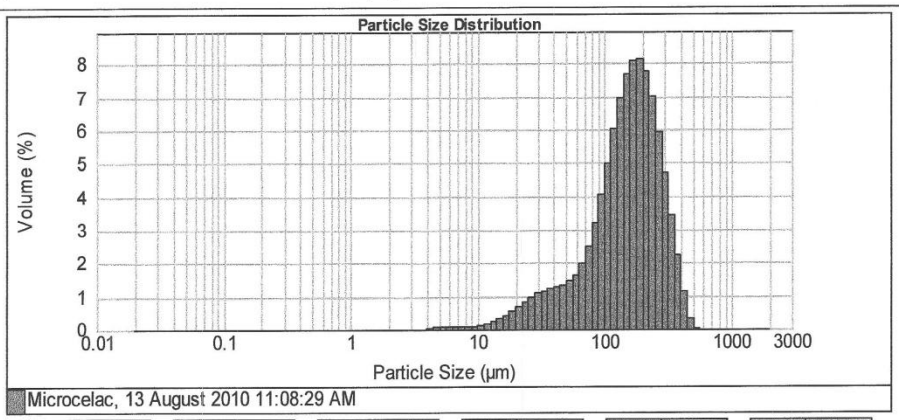
Table A-13: *Particle size analysis of Microcelac® 100. Sample 1*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Microcelac	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 11:08:29 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 11:08:30 AM	
Sample bulk lot ref: Sample 1	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 17.06 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.963 %	**Result Emulation:** Off
Concentration: 0.2425 %Vol	**Span :** 1.586	**Uniformity:** 0.476	**Result units:** Volume
Specific Surface Area: 0.0644 m²/g	**Surface Weighted Mean D[3,2]:** 93.217 um	**Vol. Weighted Mean D[4,3]:** 166.303 um	

d(0.1): 46.736 um **d(0.5):** 156.020 um **d(0.9):** 294.219 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.06	50.238	1.43	355.656	2.20
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.07	56.368	1.64	399.052	1.14
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.09	63.246	1.98	447.744	0.35
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.11	70.963	2.49	502.377	0.01
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.16	79.621	3.19	563.677	0.00
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.23	89.337	4.04	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.32	100.237	5.01	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.43	112.468	6.02	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.56	126.191	6.93	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.70	141.589	7.67	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.84	158.866	8.09	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	0.97	178.250	8.13	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.04	28.251	1.08	200.000	7.76	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.06	31.698	1.16	224.404	7.01	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.06	35.566	1.22	251.785	5.95	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.06	39.905	1.26	282.508	4.71	2000.000	
0.126	0.00	0.893	0.00	6.325	0.06	44.774	1.32	316.979	3.40		
0.142		1.002		7.096		50.238		355.656			

Operator notes:

Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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16 Aug 2010 11:49:23 AM

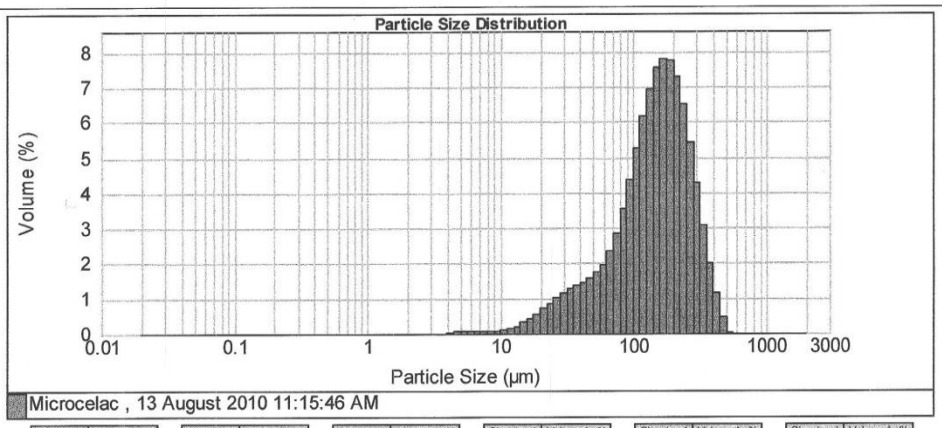
Table A-14: *Particle size analysis of Microcelac® 100. Sample 2*

MASTERSIZER 2000

Result Analysis Report

Sample Name: Microcelac	**SOP Name:** Hydro 2000 SM (RIIP - organic)	**Measured:** 13 August 2010 11:15:46 AM	
Sample Source & type:	**Measured by:** Jan Steenekamp	**Analysed:** 13 August 2010 11:15:48 AM	
Sample bulk lot ref: Sample 1	**Result Source:** Measurement		
Particle Name: Titanium Dioxide	**Accessory Name:** Hydro 2000SM (A)	**Analysis model:** General purpose	**Sensitivity:** Enhanced
Particle RI: 2.741	**Absorption:** 0.1	**Size range:** 0.020 to 2000.000 um	**Obscuration:** 16.22 %
Dispersant Name: Alcohol	**Dispersant RI:** 1.320	**Weighted Residual:** 0.864 %	**Result Emulation:** Off
Concentration: 0.2233 %Vol	**Span :** 1.638	**Uniformity:** 0.497	**Result units:** Volume
Specific Surface Area: 0.0661 m²/g	**Surface Weighted Mean D[3,2]:** 90.710 um	**Vol. Weighted Mean D[4,3]:** 161.020 um	

d(0.1): 44.987 um **d(0.5):** 149.114 um **d(0.9):** 289.278 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.142	0.00	1.002	0.00	7.096	0.06	50.238	1.73	355.656	2.01
0.022	0.00	0.159	0.00	1.125	0.00	7.962	0.07	56.368	1.98	399.052	1.12
0.025	0.00	0.178	0.00	1.262	0.00	8.934	0.08	63.246	2.35	447.744	0.45
0.028	0.00	0.200	0.00	1.416	0.00	10.024	0.11	70.963	2.87	502.377	0.02
0.032	0.00	0.224	0.00	1.589	0.00	11.247	0.15	79.621	3.55	563.677	0.00
0.036	0.00	0.252	0.00	1.783	0.00	12.619	0.21	89.337	4.36	632.456	0.00
0.040	0.00	0.283	0.00	2.000	0.00	14.159	0.30	100.237	5.25	709.627	0.00
0.045	0.00	0.317	0.00	2.244	0.00	15.887	0.41	112.468	6.15	796.214	0.00
0.050	0.00	0.356	0.00	2.518	0.00	17.825	0.55	126.191	6.94	893.367	0.00
0.056	0.00	0.399	0.00	2.825	0.00	20.000	0.70	141.589	7.53	1002.374	0.00
0.063	0.00	0.448	0.00	3.170	0.00	22.440	0.85	158.886	7.82	1124.683	0.00
0.071	0.00	0.502	0.00	3.557	0.00	25.179	1.00	178.250	7.74	1261.915	0.00
0.080	0.00	0.564	0.00	3.991	0.04	28.251	1.14	200.000	7.29	1415.892	0.00
0.089	0.00	0.632	0.00	4.477	0.05	31.698	1.25	224.404	6.51	1588.656	0.00
0.100	0.00	0.710	0.00	5.024	0.05	35.566	1.35	251.785	5.46	1782.502	0.00
0.112	0.00	0.796	0.00	5.637	0.06	39.905	1.45	282.508	4.29	2000.000	
0.126	0.00	0.893	0.00	6.325	0.06	44.774	1.56	316.979	3.09		
0.142	0.00	1.002	0.00	7.096	0.06	50.238		355.656			

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Malvern Instruments Ltd.
Malvern, UK
Tel := +[44] (0) 1684-892456 Fax +[44] (0) 1684-892789

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ANNEXURE B

Critical orifice diameter results of Granulac® 200, Lactopress®, Flowlac® 100, Tablettose® 80, Starlac®, Cellactose® 80, and Microcelac® 100.

Table B-1: *Critical orifice diameter results of the various powders*

Material	Granulac® 200 (mm)	Lactopress® (mm)	Flowlac® 100 (mm)	Tablettose® 80 (mm)	Starlac® (mm)	Cellactose® 80 (mm)	Microcelac® 100 (mm)
Sample 1	24	7	3	3	2	2	1.5
Sample 2	24	7	3	3	2	2	1.5
Sample 3	24	7	3	3	2	2	1.5
Average	24	7	3	3	2	2	1.5
Standard deviation	0	0	0	0	0	0	0
% Relative standard deviation	0%	0%	0%	0%	0%	0%	0%

ANNEXURE C

Angle of repose (AoR) results of Granulac® 200, Lactopress®, Flowlac® 100, Tablettose® 80, Starlac®, Cellactose® 80, and Microcelac® 100.

Table C-1: *Angle of repose results of the various powders*

Material	Granulac® 200 (mm)	Lactopress® (mm)	Flowlac® 100 (mm)	Tablettose® 80 (mm)	Starlac® (mm)	Cellactose® 80 (mm)	Microcelac® 100 (mm)
Sample 1	46.444	31.097	25.844	28.740	25.201	30.606	32.005
Sample 2	47.447	29.650	25.159	29.745	26.896	30.964	33.690
Sample 3	48.814	28.980	25.201	30.033	26.565	29.320	32.240
Average	47.57	29.91	25.40	29.51	32.65	30.30	32.65
Standard deviation	1.19	1.08	0.38	0.68	0.91	0.86	0.91
% Relative standard deviation	2.5%	3.6%	1.49%	2.30%	2.79%	2.84%	2.79%

ANNEXURE D

Percentage compressibility of results of Granulac® 200, Lactopress®, Flowlac® 100, Tablettose® 80, Starlac®, Cellactose® 80, and Microcelac® 100.

Table D-1: *Percentage compressibility determination of Granulac® 200*

Material	Powder mass (g)	Volume (ml)	Bulk density (g/ml)	Bulk Volume (ml)	Tapped volume (ml)	Tapped density (g/ml)	Percentage compressibilty
Sample 1	52.417	100.00	0.524	100.00	64.00	0.819	36.020
Sample 2	51.770	100.00	0.518	100.00	61.00	0.849	38.987
Sample 3	55.110	100.00	0.551	100.00	64.00	0.861	36.005
Sample 4	52.703	100.00	0.527	100.00	63.00	0.837	37.037
Sample 5	53.814	100.00	0.538	100.00	64.00	0.841	36.029
Sample 6	52.914	100.00	0.529	100.00	62.00	0.853	37.984
Average	53.12	100.00	0.531	100.00	63.00	0.84	37.0
Standard deviation	1.18	0.00	0.01	0.00	1.26	0.01	0.01
% Relative standard deviation	2.22%	0.00%	1.88%	0.00%	2.00%	1.19%	0.03%

Table D-2: *Percentage compressibility determination of Lactopress®*

Material	Powder mass (g)	Volume (ml)	Bulk density (g/ml)	Bulk Volume (ml)	Tapped volume (ml)	Tapped density (g/ml)	Percentage compressibilty
Sample 1	63.127	100.00	0.631	100.00	80.00	0.789	20.025
Sample 2	62.949	100.00	0.629	100.00	81.00	0.777	19.048
Sample 3	62.349	100.00	0.623	100.00	80.00	0.779	20.026
Sample 4	61.581	100.00	0.616	100.00	79.00	0.780	21.026
Sample 5	62.594	100.00	0.626	100.00	81.00	0.773	19.017
Sample 6	63.009	100.00	0.630	100.00	81.00	0.778	19.023
Average	62.60	100.00	0.63	100.00	80.33	0.779	0.197
Standard deviation	0.58	0.00	0.006	0.00	0.82	0.005	0.008
% Relative standard deviation	0.93%	0.00%	0.95%	0.00%	1.02%	0.64%	4.06%

Table D-3: *Percentage compressibility determination of Flowlac® 100*

Material	Powder mass (g)	Volume (ml)	Bulk density (g/ml)	Bulk Volume (ml)	Tapped volume (ml)	Tapped density (g/ml)	Percentage compressibilty
Sample 1	63.948	100.00	0.639	100.00	85.00	0.752	15.027
Sample 2	64.592	100.00	0.646	100.00	86.00	0.751	13.981
Sample 3	62.866	100.00	0.629	100.00	84.00	0.748	15.909
Sample 4	62.921	100.00	0.629	100.00	83.00	0.758	17.018
Sample 5	63.410	100.00	0.634	100.00	85.00	0.746	15.013
Sample 6	63.714	100.00	0.637	100.00	83.00	0.768	17.057
Average	63.58	100.00	0.64	100.00	84.33	0.75	15.7
Standard deviation	0.66	0.00	0.007	0.00	1.21	0.008	0.01
% Relative standard deviation	1.03%	0.00%	1.09%	0.00%	1.43%	1.07%	0.06%

Table D-4: *Percentage compressibility determination of Tablettose® 80*

Material	Powder mass (g)	Volume (ml)	Bulk density (g/ml)	Bulk Volume (ml)	Tapped volume (ml)	Tapped density (g/ml)	Percentage compressibilty
Sample 1	60.455	100.00	0.604	100.00	79.00	0.765	21.046
Sample 2	61.719	100.00	0.617	100.00	79.00	0.781	20.999
Sample 3	61.202	100.00	0.612	100.00	78.00	0.785	22.038
Sample 4	60.431	100.00	0.604	100.00	78.00	0.775	22.065
Sample 5	59.917	100.00	0.599	100.00	79.00	0.758	20.976
Sample 6	60.291	100.00	0.603	100.00	80.00	0.754	20.027
Average	60.67	100.00	0.61	100.00	78.83	0.77	21.2
Standard deviation	0.66	0.00	0.01	0.00	0.75	0.01	0.007
% Relative standard deviation	1.09%	0.00%	1.64%	0.00%	0.95%	1.30%	0.03%

Table D-5: *Percentage compressibility determination of Starlac®*

Material	Powder mass (g)	Volume (ml)	Bulk density (g/ml)	Bulk Volume (ml)	Tapped volume (ml)	Tapped density (g/ml)	Percentage compressibilty
Sample 1	59.603	100.00	0.596	100.00	84.00	0.710	16.056
Sample 2	57.809	100.00	0.578	100.00	85.00	0.680	15.000
Sample 3	58.137	100.00	0.581	100.00	86.00	0.676	14.053
Sample 4	58.014	100.00	0.580	100.00	85.00	0.683	15.081
Sample 5	57.413	100.00	0.574	100.00	84.00	0.694	15.959
Sample 6	58.694	100.00	0.587	100.00	85.00	0.683	15.418
Average	58.28	100.00	0.58	100.00	84.83	0.69	15.3
Standard deviation	0.77	0.00	0.007	0.00	0.75	0.012	0.007
% Relative standard deviation	1.32%	0.00%	1.21%	0.00%	0.88%	1.74%	0.046%

Table D-6: *Percentage compressibility determination of Cellactose® 80*

Material	Powder mass (g)	Volume (ml)	Bulk density (g/ml)	Bulk Volume (ml)	Tapped volume (ml)	Tapped density (g/ml)	Percentage compressibilty
Sample 1	41.016	100.00	0.410	100.00	81.00	0.506	18.978
Sample 2	40.461	100.00	0.405	100.00	79.00	0.512	20.898
Sample 3	40.414	100.00	0.404	100.00	78.00	0.518	22.008
Sample 4	41.012	100.00	0.410	100.00	79.00	0.519	21.002
Sample 5	40.034	100.00	0.400	100.00	80.00	0.500	20.000
Sample 6	40.294	100.00	0.403	100.00	81.00	0.497	18.913
Average	40.54	100.00	0.41	100.00	79.67	0.51	20.3
Standard deviation	0.40	0.00	0.004	0.00	1.21	0.009	0.01
% Relative standard deviation	0.97%	0.00%	0.98%	0.00%	1.52%	1.76	0.04%

Table D-7: *Percentage compressibility determination of Microcelac® 100*

Material	Powder mass (g)	Volume (ml)	Bulk density (g/ml)	Bulk Volume (ml)	Tapped volume (ml)	Tapped density (g/ml)	Percentage compressibilty
Sample 1	49.45	100.00	0.495	100.00	80.00	0.618	19.980
Sample 2	49.32	100.00	0.495	100.00	81.00	0.608	18.668
Sample 3	49.54	100.00	0.495	100.00	79.00	0.627	20.989
Sample 4	48.98	100.00	0.499	100.00	82.00	0.597	17.998
Sample 5	50.05	100.00	0.501	100.00	81.00	0.618	19.00
Sample 6	49.87	100.00	0.499	100.00	81.00	0.616	18.990
Average	49.54	100.00	0.5	100.00	80.67	0.614	19.3
Standard deviation	0.38	0.00	0.003	0.00	1.03	0.01	0.01
% Relative standard deviation	0.77%	0.00%	0.6%	0.00%	1.28%	1.63%	0.05%

ANNEXURE E

Flowrate results of Granulac® 200, Lactopress®, Flowlac® 100, Tablettose® 80, Starlac®, Cellactose® 80, and Microcelac® 100.

Table E-1: *Flowrate results of the various powders*

Material	Granulac® 200	Lactopress®	Flowlac® 100	Tablettose® 80	Starlac®	Cellactose® 80	Microcelac® 100
Sample 1 (g/sec^{-1})	0.00	9.82	15.63	17.29	18.25	17.41	19.83
Sample 2 (g/sec^{-1})	0.00	9.67	15.48	17.43	18.19	17.22	20.77
Sample 3 (g/sec^{-1})	0.00	9.43	15.89	17.09	18.37	17.63	20.21
Average (g/sec^{-1})	0.00	9.64	15.67	17.27	18.27	17.42	20.27
Standard deviation	0.00	0.20	0.21	0.17	0.09	0.20	0.47
% Relative standard deviation	0%	2.04%	1.3%	0.99%	0.5%	1.2%	2.3%

ANNEXURE F

Compressibility results and tablet analysis of Starlac®, Cellactose® 80, and Microcelac® 100.

Table F-1: *Tablet analysis of Starlac® + Mg-St 0.75%, with an upper punch setting of 15*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	401.2	10.06	3.85	67.4	0.683
2	398.2	10.06	3.84	57.2	0.717
3	391.5	10.06	3.87	60.1	0.750
4	401.4	10.05	3.69	64.6	0.767
5	398.6	10.06	3.87	68.6	0.833
6	400.0	10.07	3.91	74.4	0.850
7	383.1	10.06	3.71	61.7	0.883
8	392.2	10.05	3.74	67.8	0.883
9	398.7	10.06	3.72	70.7	0.900
10	400.2	10.05	3.89	68.2	0.900
11	402.0				0.916
12	380.9				0.916
13	396.8				0.916
14	397.0				0.933
15	392.9				0.967
16	400.2				1.033
17	399.1				1.083
18	399.4				1.100
19	397.6				
20	399.2				
Average	396.51	10.06	3.81	66.07	0.890
Standard deviation	5.77	0.01	0.08	5.19	0.08
% RSD	1.45%	0.06%	2.21%	7.85%	8.77%

Table F-2: *Tablet analysis of Starlac® + Mg-St 0.75%, with an upper punch setting of 20*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	403.8	10.03	3.56	193.7	1.416
2	403.4	10.03	3.56	189.2	1.500
3	397.1	10.04	3.59	187.6	1.533
4	402.0	10.05	3.59	191.6	1.600
5	400.9	10.03	3.500	206.8	1.633
6	403.5	10.04	3.57	214.1	1.667
7	401.6	10.03	3.53	208.00	1.667
8	389.2	10.03	3.58	228.00	1.717
9	395.6	10.02	3.48	217.00	1.733
10	398.7	10.02	3.49	192.5	1.750
11	400.9				1.800
12	396.9				1.833
13	403.6				1.833
14	403.6				1.916
15	408.3				1.983
16	397.5				2.000
17	404.1				2.017
18	399.0				2.100
19	396.7				
20	401.0				
Average	400.37	10.03	3.55	202.85	1.76
Standard deviation	4.17	0.01	0.04	13.90	0.09
% RSD	1.04%	0.09%	1.18%	6.85%	5.19%

Table F-3: *Tablet analysis of Starlac® + Mg-St 0.75%, with an upper punch setting of 22*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	399.5	10.04	3.60	203.1	1.783
2	404.3	10.03	3.57	192.0	1.817
3	398.5	10.03	3.55	212.1	1.833
4	404.8	10.03	3.57	202.3	1.833
5	402.5	10.04	3.55	223.9	1.866
6	401.9	10.03	3.54	211.7	1.866
7	404.0	10.03	3.56	216.6	1.833
8	404.2	10.04	3.59	218.2	1.933
9	397.6	10.04	3.62	204.7	1.967
10	404.9	10.04	3.53	207.2	1.967
11	397.9				1.983
12	400.1				1.983
13	400.7				1.983
14	400.1				2.00
15	399.6				2.0167
16	404.3				2.050
17	402.7				2.133
18	399.1				2.150
19	401.0				
20	396.7				
Average	401.22	10.04	3.57	209.18	1.95
Standard deviation	2.63	0.01	0.03	9.26	0.07
% RSD	0.65%	0.05%	0.79%	4.43%	3.62%

Table F-4: *Tablet analysis of Cellactose®80 + Mg-St 0.75%, at an upper punch setting of 23*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	406.5	10.06	4.41	81.0	0.317
2	394.8	10.06	4.43	80.9	0.333
3	407.1	10.07	4.40	64.6	0.333
4	417.2	10.06	4.42	65.0	0.333
5	405.2	10.06	4.41	75.2	0.366
6	406.3	10.07	4.41	72.7	0.383
7	411.4	10.07	4.42	70.7	0.383
8	418.1	10.06	4.40	72.7	0.400
9	405.7	10.06	4.40	56.8	0.416
10	408.6	10.07	4.41	71.1	0.416
11	418.4				0.416
12	423.0				0.433
13	406.7				0.450
14	404.3				0.450
15	418.2				0.483
16	411.0				0.517
17	417.0				0.550
18	406.0				0.560
19	399.9				
20	396.1				
Average	409.08	10.06	4.41	71.07	0.42
Standard deviation	7.69	0.01	0.01	7.45	0.05
% RSD	1.88%	0.05%	0.23%	10.49%	11.53%

Table F-5: *Tablet analysis of Cellactose® 80+ Mg-St 0.75%, at an upper punch setting of 25*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	418.0	10.02	3.78	263.6	15.00
2	416.3	10.01	3.82	281.5	15.00
3	414.7	10.03	3.78	275.4	15.00
4	419.6	10.02	3.69	242.3	15.00
5	417.6	10.03	3.77	268.9	15.00
6	412.5	10.02	3.67	246.8	15.00
7	420.4	10.02	3.75	228.3	15.00
8	417.8	10.03	3.71	252.1	15.00
9	403.1	10.02	3.72	256.2	15.00
10	410.2	10.02	3.77	256.2	15.00
11	412.7				15.00
12	415.6				15.00
13	419.2				15.00
14	420.9				15.00
15	406.3				15.00
16	425.8				15.00
17	417.8				15.00
18	401.5				15.00
19	427.1				
20	411.6				
Average	415.44	10.02	3.75	357.13	15.00
Standard deviation	6.65	0.01	0.05	15.96	0.00
% RSD	1.60%	0.06%	1.25%	6.21%	0.0%

Table F-6: *Tablet analysis of Cellactose®80 + Mg-St 0.75%, at an upper punch setting of 27*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	438.4	10.02	3.87	309.7	15.00
2	401.2	10.04	3.94	308.1	15.00
3	398.8	10.04	3.97	302.0	15.00
4	427.4	10.03	3.89	307.3	15.00
5	443.7	10.05	3.96	308.9	15.00
6	421.6	10.04	3.65	298.3	15.00
7	443.9	10.01	3.91	311.4	15.00
8	449.3	10.05	3.31	310.7	15.00
9	445.7	10.03	3.9	308.1	15.00
10	441.6	10.03	3.81	293.8	15.00
11	400.1				15.00
12	449.3				15.00
13	442.3				15.00
14	443.7				15.00
15	431.2				15.00
16	435.0				15.00
17	450.1				15.00
18	455.3				15.00
19	433				
20	430.1				
Average	434.09	10.03	3.82	305.83	15.00
Standard deviation	16.92	0.01	0.20	5.85	0.00
% RSD	3.90%	0.13%	5.29%	1.91%	0.0%

Table F-7: *Tablet analysis of Microcelac®100 + Mg-St 0.75%, at an upper punch setting of 17*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	401.5	10.03	4.43	96.0	1.833
2	409.3	10.04	4.33	86.6	1.900
3	410.7	10.03	4.32	88.7	2.067
4	408.0	10.03	4.34	96.0	2.467
5	398.1	10.04	4.35	95.2	2.500
6	411.2	10.04	4.34	82.5	2.667
7	406.8	10.05	4.34	73.5	1.600
8	403.0	10.04	4.33	78.9	1.700
9	408.8	10.03	4.36	98.1	1.717
10	399.4	10.04	4.30	77.6	2.267
11	410.8				2.317
12	401.4				2.400
13	399.8				2.533
14	410.1				2.733
15	415.6				2.817
16	403.6				3.167
17	412.1				3.367
18	406.0				4.267
19	411.8				
20	401.8				
Average	406.49	10.04	4.34	87.31	2.46
Standard deviation	5.07	0.01	0.03	8.89	0.63
% RSD	1.25%	0.07%	0.79%	10.18%	25.42%

Table F-8: *Tablet analysis of Microcelac®100 + Mg-St 0.75%, at an upper punch setting of 20*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	405.7	10.00	3.63	304.8	15.00
2	403.2	10.02	3.64	307.7	15.00
3	392.7	10.01	3.66	300.3	15.00
4	401.8	10.01	3.60	305.2	15.00
5	394.5	10.02	3.70	303.6	15.00
6	396.1	10.02	3.65	303.2	15.00
7	400.6	10.03	3.59	305.6	15.00
8	419.7	10.01	3.72	303.6	15.00
9	399.0	10.02	3.60	309.3	15.00
10	402.9	10.02	3.57	304.8	15.00
11	412.1				15.00
12	402.5				15.00
13	398.7				15.00
14	404.2				15.00
15	400.6				15.00
16	400.2				15.00
17	401.6				15.00
18	400.4				15.00
19	400.6				
20	409.9				
Average	402.35	10.02	3.64	304.81	15.00
Standard deviation	6.09	0.01	0.05	2.48	0.00
% RSD	1.51%	0.08%	1.33%	0.81%	0.0%

Table F-9: *Tablet analysis of Microcelac®100 + Mg-St 0.75%, at an upper punch setting of 23*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	403.9	10.01	3.56	317.1	15.00
2	398.4	10.00	3.58	320.8	15.00
3	402.4	10.01	3.59	310.5	15.00
4	403.1	10.01	3.57	320.8	15.00
5	402.0	10.02	3.58	315.6	15.00
6	407.5	10.00	3.59	314.6	15.00
7	405.0	10.00	3.55	319.5	15.00
8	403.5	10.03	3.60	311.4	15.00
9	406.3	10.01	3.56	317.5	15.00
10	400.3	10.01	3.60	325.7	15.00
11	402.2				15.00
12	408.3				15.00
13	403.2				15.00
14	401.7				15.00
15	402.1				15.00
16	402.6				15.00
17	403.3				15.00
18	405.3				15.00
19	403.4				
20	406.9				
Average	403.57	10.01	3.58	317.35	15.00
Standard deviation	2.42	0.01	0.02	4061	0.00
% RSD	0.6%	0.09%	0.49%	1.45%	0.0%

Table F-10: *Tablet analysis of Starlac® + Pruv® 0.75%, at an upper punch setting of 15*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	416.8	10.06	6.97	24.5	1.083
2	417.8	10.06	6.98	24.1	1.133
3	416.5	10.05	6.99	22.9	1.200
4	415.9	10.05	6.98	25.3	1.400
5	417.6	10.06	6.98	22.5	1.400
6	414.3	10.07	6.97	24.9	1.433
7	415.8	10.06	6.98	24.1	1.100
8	414.7	10.05	6.98	25.7	1.150
9	416.0	10.06	7.00	26.2	1.233
10	413.4	10.05	6.99	23.3	1.317
11	414.9				1.350
12	414.2				1.416
13	416.9				1.083
14	414.1				1.117
15	417.5				1.267
16	416.7				1.333
17	415.1				1.336
18	418.2				1.383
19	415.8				
20	416.2				
Average	415.92	10.06	6.98	24.35	1.26
Standard deviation	1.36	0.01	0.01	1.21	0.13
% RSD	0.33%	0.07%	0.13%	4.98%	10.23%

Table F-11: *Tablet analysis of Starlac® + Pruv® 0.75%, with an upper punch setting of 20*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	419.8	10.04	6.54	194.1	3.000
2	417.5	10.05	6.54	198.2	3.117
3	416.2	10.03	6.52	212.1	3.233
4	421.7	10.03	6.53	192.5	3.317
5	426.6	10.03	6.52	201.0	3.350
6	420.5	10.03	6.53	228.4	3.400
7	419.8	10.03	6.55	219.4	3.033
8	417.0	10.10	6.59	170.0	3.150
9	424.5	10.04	6.55	189.2	3.200
10	417.8	10.03	6.52	192.0	3.300
11	419.5				3.367
12	420.3				3.433
13	419.4				3.017
14	419.5				3.067
15	418.3				3.183
16	421.2				3.317
17	421.3				3.367
18	424.0				3.383
19	423.9				
20	421.0				
Average	420.49	10.04	6.54	199.69	3.23
Standard deviation	2.67	0.02	0.02	16.68	0.16
% RSD	0.64%	0.22%	0.33%	8.35%	4.86%

Table F-12: *Tablet analysis of Starlac® + Pruv® 0.75%, with an upper punch setting of 22*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	427.7	10.02	6.45	201.9	2.667
2	429.6	10.02	6.53	240.3	2.683
3	426.5	10.04	6.55	240.3	2.750
4	427.3	10.03	6.55	237.0	2.750
5	428.6	10.03	6.54	241.1	2.783
6	428.1	10.03	6.54	232.5	2.817
7	428.5	10.04	6.56	230.0	2.833
8	429.1	10.04	6.56	207.2	2.883
9	427.1	10.03	6.57	203.5	2.950
10	429.7	10.04	6.55	226.0	2.983
11	429.0				3.000
12	429.8				3.083
13	428.4				3.150
14	430.7				3.267
15	429.2				3.300
16	426.1				3.350
17	427.8				3.350
18	427.0				3.383
19	428.1				
20	426.3				
Average	428.23	10.03	6.54	225.98	3.00
Standard deviation	1.27	0.01	0.03	15.84	0.08
% RSD	0.30%	0.08%	0.52%	7.01%	2.81%

Table F-13: *Tablet analysis of Cellactose®80 + Pruv® 0.75%, at an upper punch setting of 23*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	433.0	10.06	7.50	35.1	0.200
2	449.0	10.06	7.51	36.4	0.200
3	449.9	10.06	7.50	37.6	0.217
4	447.7	10.06	7.50	38.8	0.233
5	447.6	10.05	7.51	42.5	0.250
6	446.8	10.05	7.51	38.8	0.283
7	440.0	10.07	7.50	34.7	0.283
8	447.9	10.05	7.51	41.3	0.283
9	433.3	10.05	7.50	43.7	0.250
10	444.3	10.05	7.51	38.4	0.267
11	441.1				0.333
12	446.8				0.333
13	444.7				0.200
14	448.1				0.233
15	432.8				0.267
16	442.9				0.300
17	444.7				0.317
18	452.4				0.333
19	445.3				
20	451.3				
Average	444.48	10.06	7.51	38.73	0.27
Standard deviation	5.82	0.01	0.01	3.01	0.05
% RSD	1.31%	0.07%	0.07%	7.78%	19.33%

Table F-14: *Tablet analysis of Cellactose®80 + Pruv® 0.75%, at an upper punch setting of 25*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	433.4	10.04	7.05	103.8	0.250
2	436.3	10.04	7.05	101.3	0.283
3	434.8	10.04	7.06	132.4	0.300
4	431.4	10.04	7.06	101.3	0.300
5	435.7	10.04	7.04	98.9	0.317
6	438.1	10.04	7.05	108.3	0.317
7	432.0	10.04	7.05	94.0	0.333
8	437.1	10.04	7.06	112.0	0.367
9	437.8	10.04	7.06	91.5	0.400
10	433.6	10.03	7.06	104.6	0.400
11	431.4				0.416
12	435.0				0.383
13	445.0				0.433
14	435.4				0.433
15	444.7				0.450
16	436.9				0.466
17	438.0				0.500
18	433.6				2.050
19	436.1				
20	447.6				
Average	436.7	10.04	7.05	104.81	0.47
Standard deviation	4.44	0.00	0.01	11.45	0.40
% RSD	1.02%	0.00%	0.1%	10.92%	86.04%

Table F-15: *Tablet analysis of Cellactose®80 + Pruv® 0.75%, at an upper punch setting of 27*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	410.2	10.04	6.69	199.0	15.00
2	411.5	10.04	6.71	212.1	15.00
3	412.2	10.03	6.74	228.4	15.00
4	414.2	10.03	6.71	235.0	15.00
5	417.8	10.03	6.68	166.3	15.00
6	419.6	10.03	6.71	205.1	15.00
7	420.1	10.03	6.74	222.3	15.00
8	420.1	10.03	6.68	168.3	15.00
9	420.6	10.03	6.7	190.8	15.00
10	422.1	10.03	6.72	213.3	15.00
11	422.3				15.00
12	422.8				15.00
13	427.0				15.00
14	427.2				15.00
15	427.2				15.00
16	430.8				15.00
17	431.4				15.00
18	435.7				15.00
19	437.3				
20	440.0				
Average	423.53	10.03	6.71	204.06	15.00
Standard deviation	8.55	0.00	0.02	23.43	0.00
% RSD	2.02%	0.04%	0.32%	11.48%	0.0%

Table F-16: *Tablet analysis of Microcelac®100 + Pruv® 0.75%, at an upper punch setting of 17*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	389.5	10.03	4.33	88.7	0.917
2	392.3	10.04	4.33	78.5	0.917
3	400.8	10.03	4.33	80.1	0.983
4	395.1	10.03	4.34	74.8	1.117
5	393.4	10.04	4.33	91.1	1.350
6	394.9	10.04	4.35	78.5	1.583
7	392.3	9.99	4.28	76.4	1.350
8	390.5	10.0	4.31	75.6	1.283
9	393.8	10.0	4.32	79.7	1.283
10	396.4	9.99	4.28	83.3	1.250
11	389.3				1.233
12	393.0				1.200
13	393.3				1.133
14	392.1				1.050
15	391.4				0.917
16	391.2				0.867
17	393.5				0.800
18	397.1				0.750
19	388.2				
20	392.0				
Average	393.01	10.02	4.32	80.67	1.11
Standard deviation	2.92	0.02	0.02	5.47	0.15
% RSA	0.74%	0.21%	0.55%	6.78%	13.32%

Table F-17: *Tablet analysis of Microcelac®100 + Pruv® 0.75%, at an upper punch setting of 20*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	393.0	9.97	3.51	307.7	15.00
2	391.9	9.99	3.58	315.0	15.00
3	390.6	9.99	3.56	310.1	15.00
4	390.7	10.01	3.54	310.5	15.00
5	390.1	10.01	3.56	307.7	15.00
6	390.4	10.00	3.54	312.6	15.00
7	392.3	10.01	3.53	316.7	15.00
8	392.9	10.02	3.60	317.5	15.00
9	393.9	10.01	3.58	313.4	15.00
10	391.3	9.98	3.48	314.2	15.00
11	383.7				15.00
12	390.3				15.00
13	389.3				15.00
14	391.4				15.00
15	392.1				15.00
16	393.1				15.00
17	391.0				15.00
18	392.8				15.00
19	393.4				
20	391.0				
Average	391.26	10.00	3.55	312.54	15.00
Standard deviation	2.18	0.02	0.04	3.47	0.00
% RSA	0.56%	0.16%	1.01%	1.11%	0.0%

Table F-18: *Tablet analysis of Microcelac®100 + Pruv® 0.75%, at an upper punch setting of 23*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	394.0	9.98	3.44	335.1	15.00
2	392.6	10.02	3.49	319.9	15.00
3	392.3	9.97	3.50	336.3	15.00
4	390.7	9.99	3.46	330.2	15.00
5	374.2	9.99	3.47	329.3	15.00
6	393.0	10.02	3.48	328.1	15.00
7	392.0	9.99	3.45	333.4	15.00
8	393.1	9.99	3.50	338.4	15.00
9	388.8	10.00	3.53	328.9	15.00
10	388.9	10.00	3.43	329.3	15.00
11	394.5				15.00
12	389.7				15.00
13	394.8				15.00
14	394.3				15.00
15	390.2				15.00
16	389.5				15.00
17	394.9				15.00
18	394.1				15.00
19	394.6				
20	389.2				
Average	391.27	10.00	3.48	330.89	15.00
Standard deviation	4.57	0.02	0.03	5.25	0.00
% RSA	1.17%	0.16%	0.89%	1.59%	0.0%

Table F-19: *Percentage friability of Starlac®, Cellactose® 80 and Microcelac® 100 + Mg-St 0.75%, at various upper punch settings (UPS)*

Material	Starlac® UPS=15	Starlac® UPS=20	Starlac® UPS=22	Cellactose® 80 UPS=23	Cellactose® 80 UPS=25	Cellactose® 80 UPS=27	Microcelac® UPS=17	Microcelac® UPS=20	Microcelac® UPS=23
Mass before (g):	3.936	4.006	4.027	4.091	4.145	4.332	4.098	4.004	4.045
Mass after (g):	3.894	3.997	4.019	4.061	4.142	4.330	4.080	4.000	4.041
% Friability	1.075	0.232	0.196	0.724	0.060	0.042	0.434	0.097	0.111

Table F-20: *Percentage friability of Starlac®, Cellactose® 80 and Microcelac® 100 + Pruv® 0.75%, at various upper punch settings (UPS)*

Material	Starlac® UPS=15	Starlac® UPS=20	Starlac® UPS=22	Cellactose® 80 UPS=23	Cellactose® 80 UPS=25	Cellactose® 80 UPS=27	Microcelac® UPS=17	Microcelac® UPS=20	Microcelac® UPS=23
Mass before (g):	4.154	4.199	4.282	4.435	4.347	4.242	3.929	3.920	3.922
Mass after (g):	3.950	4.180	4.264	4.307	4.311	4.235	3.910	3.916	3.919
% Friability	4.932	0.441	0.416	2.880	0.833	0.163	0.489	0.089	0.084

ANNEXURE G

Compressibility results and tablet analysis of Paracetamol-mixtures, containing Ac-Di-Sol®, Mg-St 0.75% and Starlac® / Cellactose® 80 / Microcelac® 100.

Table G-1: *Tablet analysis of Paracetamol with Starlac® as filler at an upper punch setting of 20*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	373.1	10.05	3.81	161.4	0.850
2	394.7	10.03	3.89	123.0	0.883
3	402.2	10.03	3.82	118.9	1.000
4	403.8	10.05	3.81	119.7	1.050
5	405.0	10.04	3.80	118.1	1.083
6	405.3	10.04	3.85	119.7	1.100
7	405.4	10.04	3.81	124.2	1.117
8	406.0	10.04	3.83	121.4	1.150
9	406.3	10.05	3.76	125.6	1.167
10	408.9	10.06	3.78	116.3	1.200
11	409.0				1.200
12	409.7				1.217
13	409.7				1.233
14	411.2				1.250
15	411.2				1.250
16	411.4				1.267
17	412.3				1.283
18	412.8				1.283
19	413.6				
20	413.7				
Average	406.27	10.04	3.82	124.83	1.14
Standard deviation	9.06	0.01	0.04	13.16	0.02
% RSA	2.23%	0.09%	0.94%	10.54%	1.76%

Table G-2: *Tablet analysis of Paracetamol with Cellactose®80 as filler at an upper punch setting of 22*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	392.5	10.03	3.77	110.3	1.583
2	394.8	10.07	3.84	122.6	1.633
3	395.3	10.04	3.81	111.6	1.650
4	395.6	10.05	3.79	125.4	1.667
5	395.7	10.05	3.89	118.9	1.717
6	395.9	10.03	3.82	134.8	1.717
7	396.4	10.04	3.78	119.3	1.750
8	396.8	10.03	3.76	116.5	1.767
9	397.0	10.03	3.81	132.4	1.817
10	397.1	10.04	3.80	128.3	1.900
11	397.5				1.917
12	397.6				1.933
13	397.7				1.933
14	397.9				1.933
15	398.2				1.950
16	398.3				1.950
17	398.6				1.967
18	399.4				1.983
19	399.5				
20	399.9				
Average	397.09	10.04	3.81	122.01	1.82
Standard deviation	1.79	0.01	0.04	8.27	0.02
% RSA	0.45%	0.13%	0.99%	6.78%	1.07%

Table G-3: *Tablet analysis of Paracetamol with Microcelac®100 as filler at an upper punch setting of 22*

Tablets	Mass variation (g)	Diameter (mm)	Thickness (mm)	Crushing strength (N)	Disintegration (min)
1	405.0	10.05	4.14	152.8	0.517
2	409.6	10.06	4.10	144.2	0.550
3	410.3	10.06	4.12	152.4	0.583
4	410.8	10.06	4.10	145.5	0.683
5	411.2	10.06	4.13	150.8	0.700
6	411.3	10.07	4.14	144.2	0.700
7	413.2	10.06	4.14	149.6	0.717
8	413.8	10.05	4.11	151.6	0.733
9	413.8	10.06	4.11	161.4	0.733
10	414.3	10.06	4.10	129.5	0.833
11	415.4				0.950
12	416.3				0.983
13	416.5				1.017
14	416.7				1.050
15	416.8				1.067
16	416.9				1.083
17	417.5				1.100
18	419.6				1.117
19	420.9				
20	423.2				
Average	414.66	10.06	4.12	148.2	0.84
Standard deviation	4.26	0.01	0.02	8.32	0.04
% RSA	1.03%	0.06%	0.42%	5.61%	4.29%

Table G-4: *Percentage friability of Paracetamol-mixtures with Starlac®, Cellactose® 80 and Microcelac® 100 as fillers at various upper punch settings (UPS)*

Material	Starlac® UPS=20	Cellactose® 80 UPS=22	Microcelac® 100 UPS=22
Mass before (g):	4.061	3.914	4.170
Mass after (g):	4.023	3.893	4.148
% Friability	0.936	0.542	0.532

ANNEXURE H

UV-absorption and dissolution of Paracetamol-tablets, containing

Ac-Di-Sol®, Mg-St 0.75% and Starlac® / Cellactose® 80 / Microcelac® 100.

Table H-1.1: *UV-absorption measurements of paracetamol from tablets containing paracetamol and Cellactose®80 at an upper punch setting of 22 (PC_1).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.2523	0.3133	0.3148	0.2935	0.0357	12.1506
2	0.4834	0.5216	0.5240	0.5097	0.0228	4.4680
4	0.6090	0.6251	0.6255	0.6199	0.0094	1.5209
8	0.6597	0.6590	0.6577	0.6588	0.0011	0.1596
16	0.6684	0.6679	0.6684	0.6682	0.0002	0.0372
32	0.6801	0.6766	0.6764	0.6777	0.0021	0.3080
64	0.7001	0.7035	0.7043	0.7026	0.0023	0.3217

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-1.2: *UV-absorption measurements of paracetamol from tablets containing paracetamol and Cellactose®80 at an upper punch setting of 22 (PC_2).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.2557	0.3052	0.3069	0.2893	0.0291	10.0533
2	0.4827	0.5224	0.5237	0.5096	0.0233	4.5686
4	0.5825	0.5755	0.5751	0.5777	0.0042	0.7195
8	0.6392	0.6347	0.6347	0.6362	0.0026	0.4059
16	0.6430	0.6553	0.6554	0.6512	0.0071	1.0974
32	0.6590	0.6727	0.6736	0.6684	0.0082	1.2208
64	0.6804	0.6820	0.6816	0.6814	0.0008	0.1192

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-1.3: *UV-absorption measurements of paracetamol from tablets containing paracetamol and Cellactose®80 at an upper punch setting of 22 (PC_3).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.3850	0.4777	0.4822	0.4483	0.0549	12.2383
2	0.5669	0.5845	0.5865	0.5793	0.0108	1.8619
4	0.6101	0.6168	0.6169	0.6146	0.0039	0.6352
8	0.6314	0.6347	0.6347	0.6336	0.0019	0.3041
16	0.6487	0.6484	0.6457	0.6476	0.0017	0.2556
32	0.6684	0.6743	0.6751	0.6726	0.0037	0.5441
64	0.6916	0.6951	0.6932	0.6933	0.0018	0.2530

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-2.1: *UV-absorption measurements of paracetamol from tablets containing paracetamol and Starlac® at an upper punch setting of 20 (PS_1).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.1510	0.1943	0.1952	0.1802	0.0253	14.0212
2	0.2921	0.3086	0.3095	0.3034	0.0098	3.2267
4	0.4578	0.4911	0.4925	0.4805	0.0196	4.0851
8	0.5488	0.5486	0.5487	0.5487	0.0001	0.0159
16	0.5542	0.5664	0.5672	0.5626	0.0073	1.2947
32	0.5716	0.5688	0.5688	0.5697	0.0016	0.2797
64	0.5821	0.5835	0.5872	0.5843	0.0026	0.4508

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-2.2: *UV-absorption measurements of paracetamol from tablets containing paracetamol and Starlac® at an upper punch setting of 20 (PS_2).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.1277	0.1525	0.1540	0.1447	0.0148	10.2044
2	0.2446	0.2712	0.2720	0.2626	0.0156	5.9345
4	0.3902	0.4244	0.4257	0.4135	0.0201	4.8668
8	0.5231	0.5436	0.5458	0.5375	0.0125	2.3309
16	0.5698	0.5703	0.5702	0.5701	0.0003	0.0468
32	0.5775	0.5800	0.5810	0.5795	0.0018	0.3070
64	0.5863	0.5885	0.5893	0.5881	0.0015	0.2635

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-2.3: *UV-absorption measurements of paracetamol from tablets containing paracetamol and Starlac® at an upper punch setting of 20 (PS_3).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.1843	0.2331	0.2341	0.2172	0.0285	13.1080
2	0.3509	0.3819	0.3842	0.3723	0.0186	4.9867
4	0.5009	0.4967	0.4963	0.4980	0.0026	0.5175
8	0.5128	0.5269	0.5270	0.5222	0.0081	1.5595
16	0.5361	0.5521	0.5536	0.5473	0.0097	1.7738
32	0.5617	0.5750	0.5757	0.5708	0.0079	1.3867
64	0.5890	0.5910	0.5921	0.5907	0.0016	0.2648

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-3.1: *UV-absorption measurements of paracetamol from tablets containing paracetamol and Microcelac®100 at an upper punch setting of 22 (PM_1).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.4421	0.5489	0.5535	0.5148	0.0630	12.2427
2	0.6217	0.6344	0.6354	0.6305	0.0076	1.2076
4	0.6502	0.6465	0.6464	0.6477	0.0022	0.3337
8	0.6721	0.6764	0.6776	0.6754	0.0029	0.4248
16	0.6952	0.6950	0.6951	0.6951	0.0001	0.0119
32	0.7029	0.7041	0.7043	0.7038	0.0007	0.1059
64	0.7097	0.7178	0.7184	0.7153	0.0048	0.6738

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-3.2: *UV-absorption measurements of paracetamol from tablets containing Microcelac®100 at an upper punch setting of 22 (PM_2).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.3363	0.4188	0.4188	0.3913	0.0476	12.1723
2	0.5326	0.5333	0.5345	0.5334	0.0009	0.1732
4	0.6504	0.6477	0.6470	0.6483	0.0018	0.2741
8	0.6795	0.6709	0.6709	0.6737	0.0050	0.7372
16	0.6843	0.6862	0.6867	0.6858	0.0013	0.1848
32	0.6995	0.6961	0.6982	0.6979	0.0018	0.2512
64	0.7150	0.7120	0.7113	0.7128	0.0020	0.2755

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-3.3: *Absorption profile of tablets containing paracetamol and Microcelac®100 at an upper punch setting of 22 (PM_3).*

Time (min)	ABS-1*	ABS-2*	ABS-3*	Average ABS*	STD*	%RSD*
1	0.3693	0.4645	0.4690	0.4343	0.0563	12.9658
2	0.5827	0.5650	0.5664	0.5714	0.0099	1.7242
4	0.6042	0.6126	0.6165	0.6111	0.0063	1.0316
8	0.6241	0.6542	0.6582	0.6455	0.0186	2.8879
16	0.6541	0.6910	0.6920	0.6790	0.0216	3.1778
32	0.6997	0.7325	0.7346	0.7222	0.0196	2.7082
64	0.8042	0.8195	0.8197	0.8145	0.0089	1.0958

ABS* - Absorption, STD* – standard deviation, %RSD* - Percentage relative standard deviation

Table H-4.1: *Amount of paracetamol dissolved (mg/ml) from tablets containing Cellactose®80 at an upper punch setting of 22 (PC_1).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.2935	44.386	0.0444
2	0.5097	79.873	0.0799
4	0.6199	97.962	0.0980
8	0.6588	104.356	0.1044
16	0.6682	105.903	0.1059
32	0.6777	107.455	0.1075
64	0.7026	111.548	0.1115

Table H-4.2: *Amount of paracetamol dissolved (mg/ml) from tablets containing Cellactose®80 at an upper punch setting of 22 (PC_2).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.2893	43.696	0.0437
2	0.5096	79.865	0.0799
4	0.5777	91.043	0.0910
8	0.6362	100.644	0.1006
16	0.6512	103.112	0.1031
32	0.6684	105.936	0.1059
64	0.6814	108.058	0.1081

Table H-4.3: *Amount of paracetamol dissolved (mg/ml) from tablets containing Cellactose®80 at an upper punch setting of 22 (PC_3).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.4483	69.802	0.0698
2	0.5793	91.301	0.0913
4	0.6146	97.096	0.0971
8	0.6336	100.214	0.1002
16	0.6476	102.514	0.1025
32	0.6726	106.617	0.1066
64	0.6933	110.016	0.1100

Table H-5.1: *Amount of paracetamol dissolved (mg/ml) from tablets containing Starlac® at an upper punch setting of 20 (PS_1).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.1802	25.787	0.0258
2	0.3034	46.009	0.0460
4	0.4805	75.081	0.0751
8	0.5487	86.283	0.0863
16	0.5626	88.564	0.0886
32	0.5697	89.733	0.0897
64	0.5843	92.118	0.0921

Table H-5.2: *Amount of paracetamol dissolved (mg/ml) from tablets containing Starlac® at an upper punch setting of 20 (PS_2).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.1447	19.971	0.0200
2	0.2626	39.318	0.0393
4	0.4135	64.081	0.0641
8	0.5375	84.440	0.0844
16	0.5701	89.793	0.0898
32	0.5795	91.336	0.0913
64	0.5881	92.743	0.0927

Table H-5.3: *Amount of paracetamol dissolved (mg/ml) from tablets containing Starlac® at an upper punch setting of 20 (PS_3).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.2172	31.861	0.0319
2	0.3723	57.332	0.0573
4	0.4980	77.956	0.0780
8	0.5222	81.934	0.0819
16	0.5473	86.049	0.0860
32	0.5708	89.909	0.0899
64	0.5907	93.177	0.0932

Table H-6.1: *Amount of paracetamol dissolved (mg/ml) from tablets containing Microcelac®100 at an upper punch setting of 22 (PM_1).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.5148	80.724	0.0807
2	0.6305	99.707	0.0997
4	0.6477	102.537	0.1025
8	0.6754	107.078	0.1071
16	0.6951	110.318	0.1103
32	0.7038	111.739	0.1117
64	0.7153	113.630	0.1136

Table H-6.2: *Amount of paracetamol dissolved (mg/ml) from tablets containing Microcelac®100 at an upper punch setting of 22 (PM_2).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.3913	60.445	0.0604
2	0.5334	83.777	0.0838
4	0.6483	102.638	0.1026
8	0.6737	106.808	0.1068
16	0.6858	108.781	0.1088
32	0.6979	110.776	0.1108
64	0.7128	113.214	0.1132

Table H-6.3: *Amount of paracetamol dissolved (mg/ml) from tablets containing Microcelac®100 at an upper punch setting of 22 (PM_3).*

Time (min)	Absorption	[ ] (ug/ml)	[ ] (mg/ml)
0	0	0	0
1	0.4343	67.498	0.0675
2	0.5714	90.001	0.0900
4	0.6111	96.525	0.0965
8	0.6455	102.171	0.1022
16	0.6790	107.676	0.1077
32	0.7222	114.770	0.1148
64	0.8145	129.909	0.1299

Table H-7.1: *Average concentration drug dissolved during dissolution for tablets containing paracetamol and Cellactose®80 at an upper punch setting of 22.*

Time (Minutes)	PC_1 [ ](mg/ml)	PC_2 [ ](mg/ml)	PC_3 [ ](mg/ml)	Average [ ] (mg/ml)	Standard deviation	%Relative standard deviation
0	0	0	0	0	0	0
1	0.0444	0.0437	0.0698	0.0526	0.0149	28.2585
2	0.0799	0.0799	0.0913	0.0837	0.0066	7.8877
4	0.0980	0.0910	0.0971	0.0954	0.0038	3.9526
8	0.1044	0.1006	0.1002	0.1017	0.0023	2.2385
16	0.1059	0.1031	0.1025	0.1038	0.0018	1.7419
32	0.1075	0.1059	0.1066	0.1067	0.0008	0.7135
64	0.1115	0.1081	0.1100	0.1099	0.0017	1.5920

Table H-7.2: *Average concentration drug dissolved during dissolution for tablets containing paracetamol and Starlac® at an upper punch setting of 20.*

Time (Minutes)	PS_1 [ ](mg/ml)	PS_2 [ ](mg/ml)	PS_3 [ ](mg/ml)	Average [ ] (mg/ml)	Standard deviation	%Relative standard deviation
0	0	0	0	0	0	0
1	0.0258	0.0200	0.0319	0.0259	0.0059	22.9800
2	0.0460	0.0393	0.0573	0.0476	0.0091	19.1483
4	0.0751	0.0641	0.0780	0.0724	0.0073	10.1189
8	0.0863	0.0844	0.0819	0.0842	0.0022	2.5921
16	0.0886	0.0898	0.0860	0.0881	0.0019	2.1653
32	0.0897	0.0913	0.0899	0.0903	0.0009	0.9734
64	0.0921	0.0927	0.0932	0.0927	0.0005	0.5746

Table H-7.3: *Average concentration drug dissolved during dissolution for tablets containing paracetamol and Microcelac®100 at an upper punch setting of 22.*

Time (Minutes)	PM_1 [ ](mg/ml)	PM_2 [ ](mg/ml)	PM_3 [ ](mg/ml)	Average [ ] (mg/ml)	Standard deviation	%Relative standard deviation
0	0	0	0	0	0	0
1	0.0807	0.0604	0.0675	0.0696	0.0103	14.8004
2	0.0997	0.0838	0.0900	0.0912	0.0080	8.8062
4	0.1025	0.1026	0.0965	0.1006	0.0035	3.4803
8	0.1071	0.1068	0.1022	0.1054	0.0028	2.6183
16	0.1103	0.1088	0.1077	0.1089	0.0013	1.2179
32	0.1117	0.1108	0.1148	0.1124	0.0021	1.8538
64	0.1136	0.1132	0.1299	0.1189	0.0095	8.0062

Table H-8.1: The *Average concentration drug dissolved during dissolution for paracetamol-mixtures tablets*

Time (min)	PC* [ ] (mg/ml)		PM* [ ] (mg/ml)		PS* [ ] (mg/ml)	
	Average [ ] (mg/ml)	Standard deviation	Average [ ] (mg/ml)	Standard deviation	Average [ ] (mg/ml)	Standard deviation
0	0	0	0	0	0	0
1	0.0526	0.0149	0.0696	0.0103	0.0259	0.0059
2	0.0837	0.0066	0.0912	0.0080	0.0476	0.0091
4	0.0954	0.0038	0.1006	0.0035	0.0724	0.0073
8	0.1017	0.0023	0.1054	0.0028	0.0842	0.0022
16	0.1038	0.0018	0.1089	0.0013	0.0881	0.0019
32	0.1067	0.0008	0.1124	0.0021	0.0903	0.0009
64	0.1099	0.0017	0.1189	0.0095	0.0927	0.0005

PC* - Paracetamol + Cellactose® 80, **PM*** - Paracetamol + Microcelac® 100, **PS*** - Paracetamol + Starlac®

Table H-8.2: *Percentage concentration drug dissolved during dissolution for tablets containing paracetamol and Cellactose®80 at an upper punch setting of 22.*

Time (Minutes)	PC_1 %	PC_2 %	PC_3 %	Average %	Standard deviation	%Relative standard deviation
0	0.000	0.000	0.000	0.000	0.000	0.000
1	41.183	40.543	64.765	48.830	13.804	28.269
2	74.109	74.102	84.712	77.641	6.124	7.888
4	90.892	84.473	90.089	88.485	3.497	3.953
8	96.825	93.381	92.982	94.396	2.113	2.239
16	98.260	95.671	95.116	96.349	1.678	1.742
32	99.701	98.291	98.923	98.971	0.706	0.713
64	103.498	100.260	102.076	101.945	1.623	1.592

Table H-8.3: *Percentage concentration drug dissolved during dissolution for tablets containing paracetamol and Starlac® at an upper punch setting of 20.*

Time (Minutes)	PS_1 %	PS_2 %	PS_3 %	Average %	Standard deviation	%Relative standard deviation
0	0.000	0.000	0.000	0.000	0.000	0.000
1	29.754	23.043	36.762	29.853	6.860	22.980
2	53.088	45.367	66.152	54.869	10.507	19.148
4	86.632	73.940	89.949	83.507	8.450	10.119
8	99.557	97.431	94.539	97.176	2.519	2.592
16	102.189	103.607	99.287	101.695	2.202	2.165
32	103.538	105.388	103.741	104.222	1.014	0.973
64	106.290	107.011	107.512	106.938	0.614	0.575

Table H-8.4: *Percentage drug dissolved during dissolution for tablets containing paracetamol and Microcelac®100 at an upper punch setting of 22.*

Time (Minutes)	PM_1 %	PM_2 %	PM_3 %	Average %	Standard deviation	%Relative standard deviation
0	0.000	0.000	0.000	0.000	0.000	0.000
1	74.898	56.083	62.627	64.536	9.552	14.800
2	92.511	77.732	83.506	84.583	7.449	8.806
4	95.137	95.231	89.560	93.309	3.247	3.480
8	99.350	99.100	94.798	97.749	2.559	2.618
16	102.357	100.931	99.906	101.064	1.231	1.218
32	103.675	102.782	106.487	104.315	1.934	1.854
64	105.430	105.044	120.534	110.336	8.834	8.006

Table H-8.5: *The AUC, IDR and R^2 values for formula containing paracetamol and Starlac® at an upper punch setting of 20.*

Time (min)	PS_1	PS_2	PS_3
0	0.000	0.000	0.000
1	0.026	0.020	0.032
2	0.046	0.039	0.057
4	0.075	0.064	0.078
8	0.086	0.084	0.082
16	0.089	0.090	0.086
32	0.090	0.091	0.090
64	0.092	0.093	0.093
AUC	5.528	5.531	5.525
IDR	0.018	0.016	0.019
R^2	0.995	1.000	0.996

Table H-8.6: *The AUC, IDR and R^2 values for formula containing paracetamol and Cellactose®80 at an upper punch setting of 22.*

Time (min)	PC_1	PC_2	PC_3
0	0.000	0.000	0.000
1	0.044	0.044	0.070
2	0.080	0.080	0.091
4	0.098	0.091	0.097
8	0.104	0.101	0.100
16	0.106	0.103	0.103
32	0.107	0.106	0.107
64	0.112	0.108	0.110
AUC	6.719	6.549	6.649
IDR	0.024	0.022	0.022
R^2	0.996	0.997	0.915

Table H-8.7: *The AUC, IDR and R^2 values for formula containing paracetamol and Microcelac®100 at an upper punch setting of 22.*

Time (min)	PM_1	PM_2	PM_3
0	0.000	0.000	0.000
1	0.081	0.060	0.067
2	0.100	0.084	0.090
4	0.103	0.103	0.097
8	0.107	0.107	0.102
16	0.110	0.109	0.108
32	0.112	0.111	0.115
64	0.114	0.113	0.130
AUC	7.004	6.910	7.230
IDR	0.022	0.024	0.022
R^2	0.887	0.939	0.923

Table H-9.1: The standard curve used for dissolution studies

Dilutions:

Volume (ml)	Standard Volume	[ ] (mg/ml)	[ ] ug/ml	Abs 1	Abs 2	Abs 3	Abs Avg
1	100	0.0025	**2.5**	0.1709	0.1719	0.1731	**0.172**
2	100	0.0050	**5**	0.3035	0.3422	0.343	**0.330**
3	100	0.0075	**7.5**	0.4685	0.469	0.4995	**0.479**
4	100	0.0100	**10**	0.6271	0.6285	0.6301	**0.629**
5	100	0.0125	**12.5**	0.7859	0.7882	0.788	**0.787**

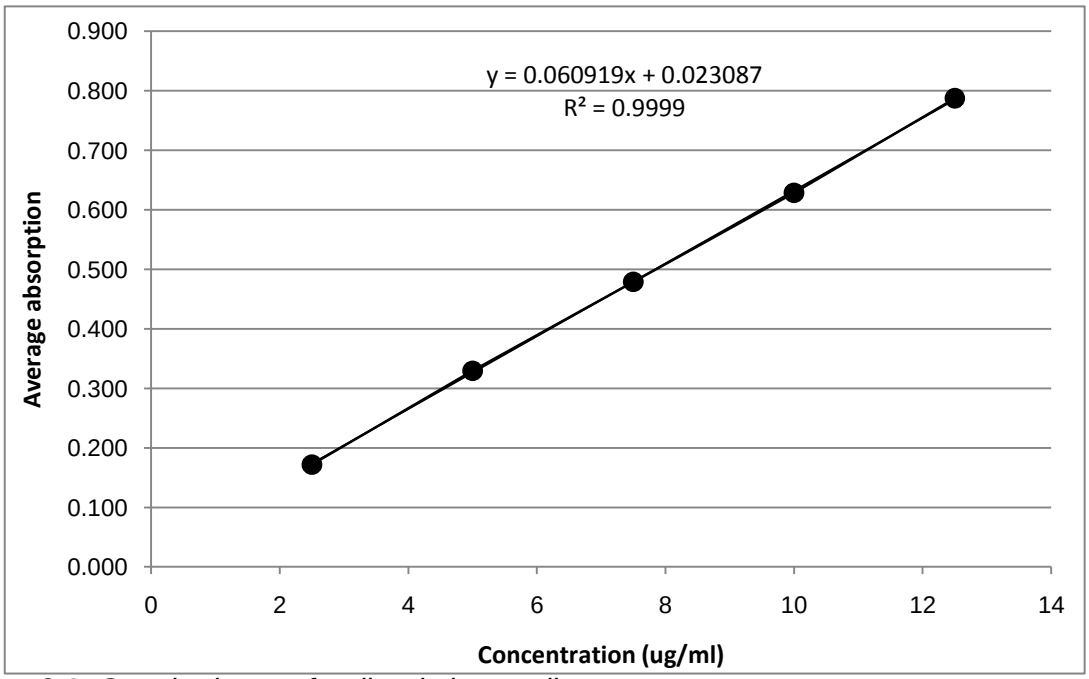

Figure 9.1: *Standard curve for dissolution studies*