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APPENDICES

Appendix A Test Results of Chitin

The degree of deacetylation (DD) was calculated from the following equation:

$$DD\ (\%) = 98.03 - 34.68(A_{1550}/A_{2878}) \quad\text{------}\quad (1)$$

where DD = Degree of deacetylation (%)

A_{1550} = Absorbance at 1550 cm^{-1} (the amide II band)

A_{2878} = Absorbance at 2878 cm^{-1} (the C-H band)

Equation (1) belonged to a standard curve prepared by plotting the absorbance ratio of the amide II band at 1550 cm^{-1} and the C-H band at 2878 cm^{-1} against the known DD of each of the chitosan reference materials. The intensities of the IR absorption band maxima at 1550 and 2878 cm^{-1} were determined by the baseline method.

Table A1 Intrinsic viscosity measurement of chitin

Conc. (g/dL)	Time (s)				η_{red} (dL/g)	η_{inh} (dL/g)
	1	2	3	Avg		
0.00	352.01	352.28	352.11	352.13	-	-
0.01	406.69	406.57	406.93	406.73	15.55	14.45
0.02	452.10	451.36	452.78	452.08	14.22	12.51
0.03	506.52	506.37	506.40	506.43	14.62	12.13
0.04	596.12	597.09	597.02	596.74	17.38	13.20
0.05	640.17	640.03	641.71	640.64	16.40	11.98

Appendix B Test Results of CM-chitin

Table B1 Degree of substitution of CM-chitin from elemental analysis

Experimental Values

	%C	%H	%N
1	40.201	7.215	5.607
2	39.905	7.082	5.638
3	40.061	7.151	5.623
Average	40.055	7.149	5.622

Calculation of Degree of Substitution of CM-chitin
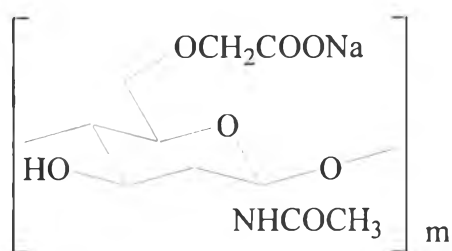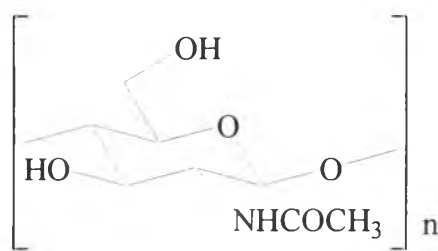
$$MW = C_{10}H_{14}O_7NNa = 283 \qquad\qquad MW = C_8H_{13}O_5N = 203$$

$$283\,m + 203\,n = 79{,}419 \qquad\text{———} \quad (1)$$

From EA, $\%C = 40.055$

           $\%H = 7.149$

           $\%N = 5.622$

We found that CM-chitin structure contains N.

That: $\qquad$ $N = \dfrac{79{,}419 \times 5.622}{100} = 4{,}464.936$

Thus, $\qquad$ $14\,m + 14\,n = 4{,}464.936$ ——— (2)

Divide (2) by 14 $\qquad$ $m + n = 318.924$

$\qquad\qquad\qquad\qquad m = 318.924 - n$ ——— (3)

Replace (3) in (1), $\qquad 283\,(318.924 - n) + 203\,n = 79{,}419$

$\qquad\qquad\qquad\qquad\qquad n = 135.456$

$\qquad\qquad\qquad\qquad\qquad m = 183.468$

Therefore, fraction $m = 183.468/318.924 = 0.58$

$\qquad\qquad n = 135.456/318.924 = 0.42$

The degree of carboxymethylation was estimated to be 0.58.

Table B2 Intrinsic viscosity measurement of CM-chitin

Conc. (g/dL)	Time (s)				η_{red} (dL/g)	η_{inh} (dL/g)
	1	2	3	Avg		
0.00	109.95	109.91	109.98	109.95	-	-
0.01	117.27	117.08	117.01	117.12	6.49	6.29
0.02	124.53	124.49	124.57	124.53	6.63	6.23
0.03	132.68	132.43	132.53	132.54	6.85	6.23
0.04	140.93	141.16	140.68	140.92	7.04	6.20
0.05	149.87	149.98	149.99	149.95	7.28	6.21

**Appendix C Test Results of CM-chitosan**

Table C1 Degree of substitution of CM-chitosan from elemental analysis

Experimental Values

	%C	%H	%N
1	37.666	5.880	6.335
2	37.670	5.814	6.328
3	37.771	6.220	6.247
Average	37.702	5.971	6.303

Calculation of Degree of Substitution of CM-chitosan
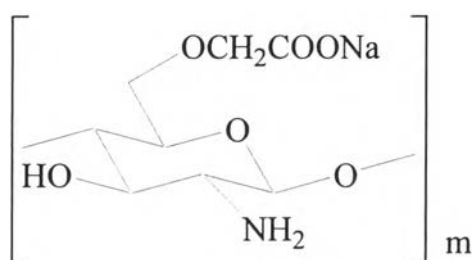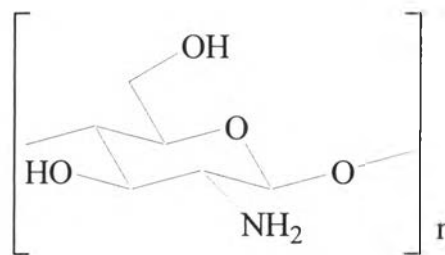
$$MW = C_8H_{12}O_6NNa = 241 \qquad\qquad MW = C_6H_{11}O_4N = 161$$

$$241\ m + 161\ n = 40{,}152 \qquad\text{———}\quad (1)$$

From EA,   %C = 37.702

%H = 5.971

%N = 6.303

We found that CM-chitosan structure contains N.

That: $N = \dfrac{40,152 \times 6.303}{100} = 2,530.781$

Thus, $14\,m + 14\,n = 2,530.781$ ———— (2)

Divide (2) by 14 $m + n = 180.770$

                         $m = 180.770 - n$ ———— (3)

Replace (3) in (1), $241\,(180.770 - n) + 161\,n = 40,152$

                                 $n = 42.670$

                                 $m = 138.100$

Therefore, fraction $m = 138.100/180.770 = 0.76$

                 $n = 42.670/180.770 = 0.24$

The degree of carboxymethylation was estimated to be 0.76.

Table C2 Intrinsic viscosity measurement of CM-chitosan

Conc. (g/dL)	Time (s)				η_{red} (dL/g)	η_{inh} (dL/g)
	1	2	3	Avg		
0.00	228.17	228.49	228.41	228.36	-	-
0.01	236.10	236.11	235.53	235.91	3.31	3.25
0.02	244.16	244.37	244.00	244.18	3.46	3.35
0.03	253.44	253.23	253.25	253.31	3.64	3.46
0.04	263.53	263.06	263.92	263.50	3.85	3.58
0.05	273.00	273.23	273.19	273.14	3.92	3.58

Appendix D Test Result of Alginate

Table D1 Intrinsic viscosity measurement of alginate

Conc. (g/dL)	Time (s)				η_{red} (dL/g)	η_{inh} (dL/g)
	1	2	3	Avg		
0.00000	104.57	104.84	104.51	104.64	-	-
0.00625	111.31	111.47	111.30	111.36	10.28	9.96
0.01250	118.29	118.41	118.50	118.40	10.52	9.88
0.02500	133.10	133.24	133.30	133.21	10.92	9.66
0.05000	167.73	167.75	167.78	167.75	12.06	9.44
0.10000	252.54	252.10	252.48	252.37	14.12	8.80

Appendix E Test Results of CM-chitosan/alginate Blend Fibers

Table E1 Atomic absorption spectroscopic test results of Ca content in pure alginate and CM-chitosan/alginate blend fibers

CM-chitosan content in alginate fiber (%)	Weight of sample per 50-mL stock solution (g)	Ca content in final solution[a] (mg/L)[b]	Ca content in stock solution (mg/L)	Ca content in sample[c] (mg)	Ca content[d] (mg/100 g fiber)
0	0.0524	0.87	87	4.35	8301.53
8.28	0.0513	0.72	72	3.60	7017.54
14.66	0.0509	0.68	68	3.40	6679.76

[a] The stock solution was diluted 100 times.

[b] Measured using atomic absorption spectrophotometer (Varian SpectrAA 300P); wavelength = 422.7 nm; nitrous oxide-acetylene flame; a calibration curve created from 0.4, 1, and 2 ppm standard Ca solutions.

[c] Ca content in sample (mg) = Ca content in stock solution (mg/L) x 50 mL.

[d] Ca content (mg/100 g fiber) = [Ca content in sample (mg)/Weight of sample (g)] x 100.

Table E2 Weight of 15-cm pure alginate and CM-chitosan/alginate blend fibers

Sample no.	Weight of fiber (g)		
	Pure alginate fiber	8.28% CM-chitosan/alginate blend fiber	14.66% CM-chitosan/alginate blend fiber
1	0.00775	0.00628	0.00565
2	0.00760	0.00625	0.00582
3	0.00786	0.00625	0.00529
4	0.00786	0.00623	0.00535
5	0.00786	0.00613	0.00566
6	0.00715	0.00603	0.00550
7	0.00749	0.00620	0.00546
8	0.00776	0.00614	0.00577
9	0.00766	0.00623	0.00541
10	0.00791	0.00619	0.00533
11	0.00704	0.00613	0.00574
12	0.00773	0.00631	0.00553
13	0.00798	0.00617	0.00572
14	0.00773	0.00616	0.00593
15	0.00767	0.00628	0.00589
16	0.00781	0.00635	0.00528
17	0.00745	0.00627	0.00566
18	0.00799	0.00614	0.00549
19	0.00773	0.00631	0.00556
20	0.00786	0.00627	0.00558
Avg (g)	0.00770	0.00622	0.00558
SD	0.00025	0.00008	0.00020
L.D.[a] (tex)	51.30	41.44	37.21
SD	1.67	0.53	1.30

[a] Linear density (tex) = (Average weight in gram per 15-cm length x 1000)/0.15.

Table E3 Tensile strength and elongation at break of pure alginate fiber

Sample no.	Weight (g/15 cm)	Linear density[a] (tex)	Max. load (N)	Tensile strength[b] (cN/tex)	Elongation at break (%)
1	0.00775	51.67	6.36	12.30	11.89
2	0.00760	50.67	6.34	12.52	11.05
3	0.00786	52.40	6.52	12.44	11.52
4	0.00786	52.40	6.22	11.87	12.44
5	0.00786	52.40	6.42	12.26	11.91
6	0.00715	47.67	5.87	12.32	11.74
7	0.00749	49.93	6.04	12.10	12.21
8	0.00776	51.73	6.30	12.17	11.96
9	0.00766	51.07	6.40	12.54	11.16
10	0.00791	52.73	6.57	12.46	11.02
11	0.00704	46.93	6.70	12.14	12.16
12	0.00773	51.53	6.26	12.15	12.13
13	0.00798	53.20	6.66	12.52	11.26
14	0.00773	51.53	6.33	12.29	11.98
15	0.00767	51.13	6.22	12.16	12.08
16	0.00781	52.07	6.70	12.85	10.98
17	0.00745	49.67	6.20	12.47	11.22
18	0.00799	53.27	6.79	12.74	11.14
19	0.00773	51.53	6.41	12.44	11.45
20	0.00786	52.40	6.35	12.11	12.51
Avg	-	-	-	12.34	11.69
SD	-	-	-	0.24	0.50

[a] Linear density (tex) = (Weight of fiber in gram per 15-cm length x 1000)/0.15.

[b] Tensile strength (cN/tex) = (Max. load in Newton x 100)/Linear density in tex.

Table E4 Tensile strength and elongation at break of 8.28% CM-chitosan/alginate blend fiber

Sample no.	Weight (g/15 cm)	Linear density[a] (tex)	Max. load (N)	Tensile strength[b] (cN/tex)	Elongation at break (%)
1	0.00628	41.87	4.78	11.41	13.35
2	0.00625	41.67	5.15	12.36	12.74
3	0.00625	41.67	4.60	11.02	13.05
4	0.00623	41.53	5.22	12.56	12.97
5	0.00613	40.87	4.55	11.14	13.05
6	0.00603	40.20	4.51	11.21	12.96
7	0.00620	41.33	5.30	12.82	12.88
8	0.00614	40.93	4.67	11.42	13.11
9	0.00623	41.53	4.94	11.88	12.82
10	0.00619	41.27	4.78	11.57	13.41
11	0.00613	40.87	4.67	11.41	13.44
12	0.00631	42.07	5.10	12.11	12.97
13	0.00617	41.13	4.93	11.98	12.44
14	0.00616	41.07	5.05	12.30	14.11
15	0.00628	41.87	4.91	11.73	12.98
16	0.00635	42.33	4.71	11.14	13.05
17	0.00627	41.80	4.94	11.81	12.91
18	0.00614	40.93	4.53	11.06	13.68
19	0.00631	42.07	4.98	11.84	14.34
20	0.00627	41.80	4.38	10.47	13.28
Avg	-	-	-	11.66	13.18
SD	-	-	-	0.59	0.45

[a] Linear density (tex) = (Weight of fiber in gram per 15-cm length x 1000)/0.15.

[b] Tensile strength (cN/tex) = (Max. load in Newton x 100)/Linear density in tex.

Table E5 Tensile strength and elongation at break of 14.66% CM-chitosan/alginate blend fiber

Sample no.	Weight (g/15 cm)	Linear density[a] (tex)	Max. load (N)	Tensile strength[b] (cN/tex)	Elongation at break (%)
1	0.00565	37.67	3.85	10.21	13.44
2	0.00582	38.80	3.98	10.24	14.19
3	0.00529	35.27	3.47	9.84	14.61
4	0.00535	35.67	3.51	9.84	14.57
5	0.00566	37.73	3.55	9.40	14.97
6	0.00550	36.67	3.60	9.82	14.31
7	0.00546	36.40	3.60	9.89	14.02
8	0.00577	38.47	3.81	9.90	13.89
9	0.00541	36.07	3.54	9.82	13.96
10	0.00533	35.53	3.47	9.76	14.57
11	0.00574	38.27	3.90	10.17	13.22
12	0.00553	36.87	3.75	10.16	12.82
13	0.00572	38.13	3.95	10.36	13.36
14	0.00593	39.53	4.01	10.15	13.89
15	0.00589	39.27	3.59	9.15	14.36
16	0.00528	35.20	3.84	10.90	14.57
17	0.00566	37.73	3.66	9.70	14.41
18	0.00549	36.60	3.54	9.67	13.21
19	0.00556	37.07	3.75	10.11	14.22
20	0.00558	37.20	3.59	9.66	13.89
Avg	-	-	-	9.94	14.02
SD	-	-	-	0.37	0.57

[a] Linear density (tex) = (Weight of fiber in gram per 15-cm length x 1000)/0.15.

[b] Tensile strength (cN/tex) = (Max. load in Newton x 100)/Linear density in tex.

Appendix F Test Results of CM-chitosan and Alginate Films

Table F1 Tensile strength and elongation at break of CM-chitosan film

Sample no.	Tensile strength (MPa)	Elongation at break (%)
1	54.17	14.07
2	56.02	13.56
3	66.16	10.61
4	59.06	16.92
5	62.88	13.55
Avg	59.66	13.74
SD	4.91	2.24

Table F2 Tensile strength and elongation at break of alginate film

Sample no.	Tensile strength (MPa)	Elongation at break (%)
1	73.78	10.50
2	78.84	11.37
3	70.68	13.91
4	80.91	12.38
5	88.57	13.33
Avg	78.56	12.30
SD	6.91	1.39

Appendix G Test Results of Chitosan-Coated Alginate Fibers

Table G1   UV/Visible spectroscopic test results of chitosan content coated on alginate fibers spun through the first coagulation bath containing different chitosan concentrations

Chitosan concentration in the first coagulation bath (%)	Weight of sample per 6-mL stock solution (g)	Chitosan content in final volume[a] (mg/L)[b]	Chitosan content in 6-mL stock solution[c] (mg)	Chitosan content coated on sample[c] (mg)	Chitosan content[d] (mg/100 g fiber)
0	0.0520	-	-	-	-
2.2×10^{-2}	0.0540	1.9000	0.0114	0.0114	21.0660
6.7×10^{-2}	0.0500	1.8667	0.0112	0.0112	22.4820
11.1×10^{-2}	0.0500	1.9167	0.0115	0.0115	23.0730

[a] Only 3 mL of stock solution was used for analyzing.

[b] Measured using UV/Visible spectrophotometer (Perkin Elmer model Lambda 10); a calibration curve created from 0.25, 0.50, 0.75, 1.00, 1.50, 2.00, and 2.50 ppm standard chitosan solutions.

[c] Chitosan content in 6-mL stock solution (mg) = Chitosan content coated on fiber sample (mg) = Chitosan content in final volume (mg/L) x 6 mL.

[d] Chitosan content (mg/100 g fiber) = [Chitosan content coated on sample (mg)/Weight of sample (g)] x 100.

Table G2 Atomic absorption spectroscopic test results of Ca content in pure alginate and chitosan-coated alginate fibers spun through the first coagulation bath containing different chitosan concentrations

Chitosan concentration in the first coagulation bath (%)	Weight of sample per 50-mL stock solution (g)	Ca content in final solution[a] (mg/L)[b]	Ca content in stock solution (mg/L)	Ca content in sample[c] (mg)	Ca content[d] (mg/100 g fiber)
0	0.0518	0.85	85	4.25	8204.63
2.2×10^{-2}	0.0518	0.94	94	4.70	9073.36
6.7×10^{-2}	0.0522	0.89	89	4.45	8524.90
11.1×10^{-2}	0.0505	0.83	83	4.15	8217.82

[a] The stock solution was diluted 100 times.

[b] Measured using atomic absorption spectrophotometer (Varian SpectrAA 300P); wavelength = 422.7 nm; nitrous oxide-acetylene flame; a calibration curve created from 0.4, 1, and 2 ppm standard Ca solutions.

[c] Ca content in sample (mg) = Ca content in stock solution (mg/L) x 50 mL.

[d] Ca content (mg/100 g fiber) = [Ca content in sample (mg)/Weight of sample (g)] x 100.

Table G3 Weight of 15-cm pure alginate and chitosan-coated alginate fibers spun through the first coagulation bath containing different chitosan concentrations

Sample no.	Weight of fiber (g)			
	0.0% chitosan	$2.2 \times 10^{-2}\%$ chitosan	$6.7 \times 10^{-2}\%$ chitosan	$11.1 \times 10^{-2}\%$ chitosan
1	0.00398	0.00534	0.00625	0.00671
2	0.00406	0.00536	0.00631	0.00672
3	0.00449	0.00542	0.00613	0.00675
4	0.00383	0.00533	0.00609	0.00674
5	0.00409	0.00529	0.00670	0.00673
6	0.00394	0.00537	0.00634	0.00703
7	0.00398	0.00536	0.00672	0.00684
8	0.00374	0.00537	0.00604	0.00684
9	0.00400	0.00527	0.00610	0.00683
10	0.00402	0.00534	0.00603	0.00687
11	0.00420	0.00525	0.00620	0.00736
12	0.00391	0.00529	0.00613	0.00665
13	0.00390	0.00561	0.00610	0.00674
14	0.00386	0.00532	0.00586	0.00673
15	0.00392	0.00522	0.00612	0.00655
16	0.00385	0.00549	0.00612	0.00684
17	0.00384	0.00534	0.00619	0.00678
18	0.00380	0.00531	0.00607	0.00674
19	0.00404	0.00523	0.00624	0.00683
20	0.00393	0.00526	0.00607	0.00664
Avg (g)	0.00397	0.00534	0.00619	0.00680
SD	0.00016	0.00009	0.00021	0.00017
L.D.[a] (tex)	26.46	35.59	41.27	45.31
SD	1.09	0.61	1.38	1.11

[a] Linear density (tex) = (Average weight in gram per 15-cm length x 1000)/0.15.

Table G4 Tensile strength and elongation at break of pure alginate fiber

Sample no.	Weight (g/15 cm)	Linear density[a] (tex)	Max. load (N)	Tensile strength[b] (cN/tex)	Elongation at break (%)
1	0.00398	26.53	3.22	12.13	16.48
2	0.00406	27.07	2.51	9.27	11.60
3	0.00449	29.93	2.82	9.40	12.82
4	0.00383	25.53	2.57	10.07	14.65
5	0.00409	27.27	2.53	9.29	13.43
6	0.00394	26.27	2.75	10.45	13.43
7	0.00398	26.53	2.94	11.07	17.70
8	0.00374	24.93	2.59	10.37	12.82
9	0.00400	26.67	2.70	10.13	13.43
10	0.00402	26.80	2.82	10.53	11.60
11	0.00420	28.00	2.62	9.34	10.99
12	0.00391	26.07	2.86	10.97	15.26
13	0.00390	26.00	2.69	10.36	14.65
14	0.00386	25.73	3.06	11.89	14.04
15	0.00392	26.13	2.65	10.13	17.70
16	0.00385	25.67	2.81	10.94	14.65
17	0.00384	25.60	2.65	10.34	14.65
18	0.00380	25.33	2.93	11.56	15.26
19	0.00404	26.93	2.49	9.23	11.60
20	0.00393	26.20	2.49	9.49	15.26
Avg	-	-	-	10.35	14.10
SD	-	-	-	0.88	1.92

[a] Linear density (tex) = (Weight of fiber in gram per 15-cm length x 1000)/0.15.

[b] Tensile strength (cN/tex) = (Max. load in Newton x 100)/Linear density in tex.

Table G5 Tensile strength and elongation at break of chitosan-coated alginate fiber spun through the first coagulation bath containing 2.2 x 10^{-2}% chitosan concentration

Sample no.	Weight (g/15 cm)	Linear density[a] (tex)	Max. load (N)	Tensile strength[b] (cN/tex)	Elongation at break (%)
1	0.00534	35.60	4.26	11.96	17.09
2	0.00536	35.73	4.50	12.60	15.26
3	0.00542	36.13	5.00	13.83	15.87
4	0.00533	35.53	4.34	12.22	17.70
5	0.00529	35.27	4.11	11.64	15.26
6	0.00537	35.80	4.36	12.19	17.09
7	0.00536	35.73	4.46	12.49	16.48
8	0.00537	35.80	4.82	13.47	13.43
9	0.00527	35.13	4.36	12.40	15.26
10	0.00534	35.60	4.36	12.24	18.31
11	0.00525	35.00	4.59	13.10	15.87
12	0.00529	35.27	4.26	12.07	16.48
13	0.00561	37.40	4.75	12.71	15.26
14	0.00532	35.47	4.56	12.84	17.09
15	0.00522	34.80	4.12	11.84	15.87
16	0.00549	36.60	4.26	11.63	19.53
17	0.00534	35.60	4.14	11.64	17.70
18	0.00531	35.40	4.18	11.81	18.92
19	0.00523	34.87	4.82	13.83	16.48
20	0.00526	35.07	4.27	12.18	14.65
Avg	-	-	-	12.43	16.48
SD	-	-	-	0.68	1.49

[a] Linear density (tex) = (Weight of fiber in gram per 15-cm length x 1000)/0.15.

[b] Tensile strength (cN/tex) = (Max. load in Newton x 100)/Linear density in tex.

Table G6 Tensile strength and elongation at break of chitosan-coated alginate fiber spun through the first coagulation bath containing $6.7 \times 10^{-2}\%$ chitosan concentration

Sample no.	Weight (g/15 cm)	Linear density[a] (tex)	Max. load (N)	Tensile strength[b] (cN/tex)	Elongation at break (%)
1	0.00625	41.67	4.89	11.74	18.92
2	0.00631	42.07	4.70	11.17	17.70
3	0.00613	40.87	4.95	12.12	18.92
4	0.00609	40.60	5.33	13.14	18.31
5	0.00670	44.67	5.42	12.13	17.70
6	0.00634	42.27	5.68	13.45	17.09
7	0.00672	44.80	4.94	11.04	17.70
8	0.00604	40.27	4.94	12.28	18.92
9	0.00610	40.67	5.40	13.27	18.31
10	0.00603	40.20	5.28	13.13	17.09
11	0.00620	41.33	5.42	13.11	18.31
12	0.00613	40.87	4.82	11.80	18.92
13	0.00610	40.67	4.61	11.33	18.31
14	0.00586	39.07	5.37	13.75	17.70
15	0.00612	40.80	5.39	13.22	18.92
16	0.00612	40.80	4.79	11.74	18.92
17	0.00619	41.27	4.91	11.91	18.31
18	0.00607	40.47	4.99	12.32	17.70
19	0.00624	41.60	5.28	12.70	17.09
20	0.00607	40.47	4.94	12.22	18.31
Avg	-	-	-	12.38	18.16
SD	-	-	-	0.80	0.65

[a] Linear density (tex) = (Weight of fiber in gram per 15-cm length x 1000)/0.15.

[b] Tensile strength (cN/tex) = (Max. load in Newton x 100)/Linear density in tex.

Table G7 Tensile strength and elongation at break of chitosan-coated alginate fiber spun through the first coagulation bath containing 11.1 x 10^{-2}% chitosan concentration

Sample no.	Weight (g/15 cm)	Linear density[a] (tex)	Max. load (N)	Tensile strength[b] (cN/tex)	Elongation at break (%)
1	0.00671	44.73	5.76	12.88	19.72
2	0.00672	44.80	5.77	12.88	20.31
3	0.00675	45.00	5.88	13.07	19.09
4	0.00674	44.93	5.90	13.13	20.92
5	0.00673	44.87	5.77	12.86	19.73
6	0.00703	46.87	6.02	12.83	20.92
7	0.00684	45.60	5.73	12.57	20.31
8	0.00684	45.60	5.63	12.34	20.92
9	0.00683	45.53	5.74	12.61	19.09
10	0.00687	45.80	5.94	12.97	20.92
11	0.00736	49.07	6.15	12.53	19.73
12	0.00665	44.33	5.27	11.88	19.09
13	0.00674	44.93	5.50	12.23	19.75
14	0.00673	44.87	5.60	12.49	19.09
15	0.00655	43.67	5.52	12.64	19.74
16	0.00684	45.60	5.34	11.72	19.71
17	0.00678	45.20	5.70	12.60	19.09
18	0.00674	44.93	5.86	13.03	19.09
19	0.00683	45.53	5.82	12.78	20.31
20	0.00664	44.27	5.37	12.14	20.31
Avg	-	-	-	12.61	19.89
SD	-	-	-	0.39	0.69

[a] Linear density (tex) = (Weight of fiber in gram per 15-cm length x 1000)/0.15.

[b] Tensile strength (cN/tex) = (Max. load in Newton x 100)/Linear density in tex.

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