

Erratum

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The publishers wish to bring to the notice of the readers the following tables which were printed incorrectly in the original publication of the above paper. The publishers wish to apologise to the authors for any embarrassment or inconvenience caused.

Table 1. Glass transition temperatures (T_g , °C) of blends of corn starch and MCC or MC conditioned at different relative humidities. The results give the average and the standard deviation of at least three or five measurements for thermal and permeability measurements, respectively

Corn starch %	Water %	MCC %	T_g (°C)			
			DTA (2nd run)	DMTA (E')	DMTA ($\tan \delta$)	Permeability (inflection)
85	15	0	61.2±1.3	62.8±1.7	66.1±1.5	60.5±0.8
80	15	5	63.6±1.2	65.9±1.2	69.0±2.1	64.2±1.1
75	15	10	65.0±1.4	67.7±1.4	71.4±1.4	66.4±1.2
70	15	15	66.8±1.3	69.5±1.5	75.6±1.7	68.0±1.5
60	15	25	69.2±1.5	71.3±1.8	77.5±1.6	70.5±1.3
55	15	30	70.6±1.8	72.4±1.1	79.6±1.5	71.4±1.4
45	15	40	72.1±1.6	74.0±1.5	82.0±1.0	73.5±1.5
47.5	5	47.5	124.8±1.9	127.1±1.8	136.9±2.2	—
45.0	10	45.0	97.3±2.0	99.5±0.9	109.2±1.6	—
42.5	15	42.5	74.2±1.6	76.4±1.2	88.3±1.5	75.6±1.2
40.0	20	40.0	57.0±1.7	59.3±1.4	69.5±1.3	55.8±1.5
37.5	25	37.5	43.2±2.1	45.6±1.3	56.3±1.4	44.6±0.8
35.0	30	35.0	22.1±1.2	21.0±1.7	38.4±0.9	20.5±1.1
Corn Starch %	Water %	MC %				
78	17	2	58.3±1.5	59.5±1.9	62.8±1.9	55.6±2.0
71	17	12	59.5±1.7	61.8±2.1	66.9±2.1	58.7±1.5
65	17	18	61.0±1.3	60.4±1.5	70.5±1.5	60.5±1.6
58	17	25	65.2±1.1	67.1±1.8	76.0±1.8	66.7±1.4
51	17	32	68.1±1.4	69.2±2.0	80.5±1.5	69.8±1.2
43	17	40	71.2±1.3	70.6±1.7	84.8±2.0	72.5±1.6
28	17	55	77.0±1.6	76.1±1.9	89.3±1.6	78.0±1.5
47.0	6.0	47.0	110.9±1.5	109.4±2.3	123.6±1.8	—
45.0	10.0	45.0	92.2±1.6	91.5±1.2	110.2±1.3	—
42.0	16.0	42.0	67.3±1.5	68.4±0.9	79.6±1.8	66.2±1.6
39.0	22.0	39.0	49.8±1.0	48.5±1.3	63.5±2.1	53.4±1.5
37.0	26.0	37.0	34.5±1.3	36.7±1.4	45.6±1.5	36.0±1.1
35.0	30.0	35.0	17.1±1.2	18.5±1.5	23.0±0.9	16.2±1.7

Table 2. Thermal and thermomechanical properties of corn starch-MCC (1:1)/ glycerol, corn starch-MCC (1:1)/sorbitol, corn starch-MCC (1:1)/sucrose, corn starch-MCC (1:1)/ xylose blends. The results give the average and the standard deviation of at least three or five measurements for thermal and permeability measurements, respectively

Corn starch	MCC	Glycerol	Water	DTA	DMTA ($\tan \delta$)	DMTA (E')	Permeability (inflection)
47.5	47.5	0	5	118.5 $\pm$ 2.5	130.0 $\pm$ 4.1	113.4 $\pm$ 2.0	---
45.0	45.0	5	5	93.2 $\pm$ 1.9	98.5 $\pm$ 3.0	87.5 $\pm$ 1.7	---
42.5	42.5	10	5	59.4 $\pm$ 1.4	70.3 $\pm$ 2.3	52.3 $\pm$ 1.8	56.4 $\pm$ 1.9
40.0	40.0	15	5	37.3 $\pm$ 1.7	42.5 $\pm$ 1.8	34.0 $\pm$ 1.5	38.5 $\pm$ 1.6
38.0	38.0	19	5	-2.8 $\pm$ 0.3	6.8 $\pm$ 1.3	-5.1 $\pm$ 1.2	---
34.0	34.0	27	5	-15.3 $\pm$ 0.7	-5.7 $\pm$ 0.7	-21.4 $\pm$ 2.0	---
Corn Starch	MCC	Sorbitol	Water				
45.0	45.0	5	5	91.8 $\pm$ 3.5	97.5 $\pm$ 2.8	84.1 $\pm$ 1.4	---
42.5	42.5	10	5	57.0 $\pm$ 1.7	66.9 $\pm$ 1.5	48.0 $\pm$ 1.8	52.5 $\pm$ 2.1
39.5	39.5	16	5	23.8 $\pm$ 1.2	30.3 $\pm$ 1.7	17.8 $\pm$ 1.5	27.0 $\pm$ 1.8
35.5	35.5	24	5	-14.1 $\pm$ 0.6	1.7 $\pm$ 1.2	-18.3 $\pm$ 1.7	---
33.5	33.5	28	5	-28.1 $\pm$ 0.9	-14.7 $\pm$ 1.3	-32.5 $\pm$ 1.0	---
Corn Starch	MCC	Sucrose	Water				
44.5	44.5	6	5	87.4 $\pm$ 1.8	93.5 $\pm$ 2.5	80.1 $\pm$ 2.0	---
42.5	42.5	10	5	51.2 $\pm$ 1.2	58.3 $\pm$ 1.9	44.6 $\pm$ 2.2	47.0 $\pm$ 1.9
40.0	40.0	15	5	19.1 $\pm$ 0.3	27.4 $\pm$ 1.5	11.8 $\pm$ 1.7	20.6 $\pm$ 2.1
37.5	37.5	20	5	-10.0 $\pm$ 0.4	-4.5 $\pm$ 1.6	-22.5 $\pm$ 1.5	---
34.5	34.5	26	5	-23.2 $\pm$ 1.2	-13.9 $\pm$ 1.0	NO ^a	---
Corn Starch	MCC	Xylose	Water				
45.0	45.0	5	5	84.2 $\pm$ 1.9	88.0 $\pm$ 2.2	77.1 $\pm$ 1.8	81.2 $\pm$ 2.3
43.0	43.0	9	5	49.6 $\pm$ 1.4	53.4 $\pm$ 1.7	40.3 $\pm$ 1.2	44.3 $\pm$ 1.8
39.5	39.5	16	5	11.3 $\pm$ 0.3	17.3 $\pm$ 1.8	7.4 $\pm$ 1.4	15.2 $\pm$ 2.0
37.5	37.5	20	5	-8.5 $\pm$ 0.5	-1.2 $\pm$ 1.2	-14.5 $\pm$ 1.6	---
35.0	35.0	25	5	-20.4 $\pm$ 0.9	-12.2 $\pm$ 0.9	NO ^a	---

^aNO: not observed because the run started from -50°C.

Table 3. Mechanical properties and WVTR of corn starch-MCC (1:1)/glycerol, corn starch-MCC (1:1)/sorbitol, corn starch-MCC (1:1)/sucrose and corn starch-MCC (1:1)/xylose blends at different relative humidities. The results give the average and the standard deviation of at least eight measurements

Corn starch	MCC	Glycerol	Water	Tensile strength (MPa)	Tensile modulus (MPa)	Elongation %	WVTR (g m ⁻¹ sec ⁻¹ Pa ⁻¹) $\times 10^{-11}$
47.5	47.5	0	5	90.0 $\pm$ 1.6	158.9 $\pm$ 12.5	2.3 $\pm$ 0.4	0.2 $\pm$ 0.03
45.0	45.0	5	5	78.4 $\pm$ 2.3	139.0 $\pm$ 11.9	3.8 $\pm$ 0.2	1.8 $\pm$ 0.1
42.5	42.5	10	5	66.3 $\pm$ 1.8	124.2 $\pm$ 10.4	4.4 $\pm$ 0.5	3.4 $\pm$ 0.1
40.0	40.0	15	5	55.6 $\pm$ 1.5	107.4 $\pm$ 12.0	5.3 $\pm$ 0.3	5.7 $\pm$ 0.3
38.0	38.0	19	5	43.2 $\pm$ 1.2	75.1 $\pm$ 3.9	7.0 $\pm$ 0.6	8.2 $\pm$ 0.8
34.0	34.0	27	5	25.0 $\pm$ 1.7	53.4 $\pm$ 3.2	8.5 $\pm$ 0.5	11.4 $\pm$ 1.2
Corn Starch	MCC	Sorbitol	Water				
45.0	45.0	5	5	73.3 $\pm$ 2.1	131.5 $\pm$ 12.3	4.1 $\pm$ 0.3	2.5 $\pm$ 0.1
42.5	42.5	10	5	59.5 $\pm$ 1.5	112.4 $\pm$ 11.6	4.7 $\pm$ 0.6	4.6 $\pm$ 0.2
39.5	39.5	16	5	48.9 $\pm$ 1.8	94.2 $\pm$ 11.8	6.0 $\pm$ 0.5	7.0 $\pm$ 0.5
35.5	35.5	24	5	33.4 $\pm$ 2.0	62.5 $\pm$ 6.4	8.1 $\pm$ 0.4	8.9 $\pm$ 0.6
33.5	33.5	28	5	18.3 $\pm$ 1.6	40.0 $\pm$ 3.1	9.3 $\pm$ 0.4	14.2 $\pm$ 0.3
Corn Starch	MCC	Sucrose	Water				
44.5	44.5	6	5	65.0 $\pm$ 1.4	120.5 $\pm$ 12.1	2.9 $\pm$ 0.2	3.8 $\pm$ 0.4
42.5	42.5	10	5	51.8 $\pm$ 1.8	103.0 $\pm$ 11.9	3.4 $\pm$ 0.3	6.2 $\pm$ 0.3
40.0	40.0	15	5	43.4 $\pm$ 1.3	82.7 $\pm$ 7.5	3.5 $\pm$ 0.5	8.4 $\pm$ 0.6
37.5	37.5	20	5	31.2 $\pm$ 1.6	52.9 $\pm$ 5.2	3.3 $\pm$ 0.3	10.5 $\pm$ 0.9
34.5	34.5	26	5	21.0 $\pm$ 2.0	33.5 $\pm$ 3.3	3.1 $\pm$ 0.2	16.3 $\pm$ 1.4
Corn Starch	MCC	Xylose	Water				
45.0	45.0	5	5	63.9 $\pm$ 1.8	119.6 $\pm$ 11.5	3.6 $\pm$ 0.2	2.8 $\pm$ 0.2
43.0	43.0	9	5	52.4 $\pm$ 2.2	104.3 $\pm$ 10.8	4.5 $\pm$ 0.4	4.5 $\pm$ 0.3
39.5	39.5	16	5	41.7 $\pm$ 1.7	81.2 $\pm$ 7.5	5.6 $\pm$ 0.5	7.4 $\pm$ 0.6
37.5	37.5	20	5	32.6 $\pm$ 1.5	50.8 $\pm$ 4.6	7.4 $\pm$ 0.6	9.7 $\pm$ 0.5
35.0	35.0	25	5	20.5 $\pm$ 1.2	34.7 $\pm$ 2.9	8.8 $\pm$ 0.8	13.6 $\pm$ 1.2

Table 4. Gas permeability (O_2 , N_2 , CO_2 in $cm^2 \text{ sec}^{-1} \text{ Pa}^{-1}$) of corn starch-MCC or MC (1:1)/glycerol, corn starch-MCC or MC (1:1)/sorbitol, corn starch-MCC or MC (1:1)/sucrose and corn starch-MCC(1:1)/xylose blends at different relative humidities. The results give the average of at least five measurements at ambient temperature ($23 \pm 2^\circ \text{C}$)

Corn starch	MCC	Glycerol	Water	O_2	N_2	CO_2
47.5	47.5	0	5	1.8×10^{-17}	3.2×10^{-18}	1.2×10^{-16}
45.0	45.0	5	5	2.4×10^{-16}	1.4×10^{-17}	2.0×10^{-15}
42.5	42.5	10	5	3.6×10^{-15}	6.5×10^{-16}	3.1×10^{-14}
40.0	40.0	15	5	1.0×10^{-15}	0.9×10^{-16}	1.1×10^{-14}
38.0	38.0	19	5	4.1×10^{-14}	2.1×10^{-15}	0.5×10^{-13}
34.0	34.0	27	5	3.0×10^{-13}	3.7×10^{-14}	0.7×10^{-12}
Corn Starch	MCC	Sorbitol	Water			
45.0	45.0	5	5	4.0×10^{-16}	4.3×10^{-17}	2.5×10^{-15}
42.5	42.5	10	5	5.1×10^{-15}	6.0×10^{-16}	3.6×10^{-14}
39.5	39.5	16	5	3.7×10^{-15}	2.8×10^{-16}	1.3×10^{-14}
35.5	35.5	24	5	2.3×10^{-14}	3.1×10^{-15}	2.5×10^{-13}
33.5	33.5	28	5	4.5×10^{-12}	0.7×10^{-13}	1.5×10^{-11}
Corn Starch	MCC	Sucrose	Water			
44.5	44.5	6	5	1.5×10^{-16}	0.9×10^{-17}	1.4×10^{-15}
42.5	42.5	10	5	2.6×10^{-15}	2.1×10^{-16}	2.5×10^{-14}
40.0	40.0	15	5	1.1×10^{-15}	0.8×10^{-16}	1.1×10^{-14}
37.5	37.5	20	5	2.4×10^{-14}	1.0×10^{-15}	3.0×10^{-13}
34.5	34.5	26	5	3.0×10^{-12}	0.7×10^{-13}	1.9×10^{-11}
Corn Starch	MCC	Xylose	Water			
45.0	45.0	5	5	1.6×10^{-16}	1.1×10^{-17}	1.0×10^{-15}
43.0	43.0	9	5	2.4×10^{-15}	3.5×10^{-16}	3.1×10^{-14}
39.5	39.5	16	5	1.5×10^{-15}	0.9×10^{-16}	1.2×10^{-14}
37.5	37.5	20	5	0.6×10^{-14}	1.3×10^{-15}	1.5×10^{-13}
35.0	35.0	25	5	3.0×10^{-13}	5.5×10^{-14}	2.9×10^{-12}
Corn Starch	MC	Glycerol	Water			
47.5	47.5	0	5	2.2×10^{-17}	4.6×10^{-18}	2.0×10^{-16}
45.0	45.0	5	5	3.1×10^{-16}	2.3×10^{-17}	3.4×10^{-15}
42.5	42.5	10	5	4.5×10^{-15}	8.4×10^{-16}	4.7×10^{-14}
40.0	40.0	15	5	1.7×10^{-15}	2.9×10^{-16}	1.9×10^{-14}
37.0	37.0	21	5	5.3×10^{-14}	4.3×10^{-15}	1.2×10^{-13}
33.5	33.5	28	5	4.9×10^{-13}	4.6×10^{-14}	1.5×10^{-12}
Corn Starch	MC	Sorbitol	Water			
45.0	45.0	5	5	6.1×10^{-16}	5.9×10^{-17}	3.8×10^{-15}
42.5	42.5	10	5	7.2×10^{-15}	8.3×10^{-16}	5.4×10^{-14}
40.0	40.0	15	5	6.5×10^{-15}	4.0×10^{-16}	2.6×10^{-14}
34.5	34.5	26	5	3.7×10^{-14}	5.3×10^{-15}	3.9×10^{-13}
32.5	32.5	30	5	6.4×10^{-12}	1.8×10^{-13}	2.8×10^{-11}
Corn Starch	MC	Sucrose	Water			
45.0	45.0	5	5	2.8×10^{-16}	1.6×10^{-17}	1.7×10^{-15}
42.0	42.0	11	5	4.2×10^{-15}	3.4×10^{-16}	4.3×10^{-14}
40.0	40.0	15	5	2.0×10^{-15}	1.7×10^{-16}	2.2×10^{-14}
37.0	37.0	21	5	3.7×10^{-14}	3.9×10^{-15}	3.3×10^{-13}
34.0	34.0	27	5	5.1×10^{-13}	1.6×10^{-14}	4.5×10^{-12}

Table 5. Activation energies for diffusion (E_D^a , kJ mol⁻¹) and permeation (E_P^b , kJ mol⁻¹) both below ($T < T_g$) and above ($T > T_g$) the glass transition temperature (T_g) for corn starch/water/MCC blends. The results give the average and the standard deviation of five measurements

Corn starch (%w/w)	Water (%w/w)	MCC (%w/w)	N ₂				O ₂			
			E_D^a		E_P^b		E_D^a		E_P^b	
			($T < T_g$)	($T > T_g$)	($T < T_g$)	($T > T_g$)	($T < T_g$)	($T > T_g$)	($T < T_g$)	($T > T_g$)
85	15	0	4.7±0.29	3.2±0.18	6.8±0.61	4.6±0.31	4.3±0.28	2.8±0.010	6.3±0.41	4.1±0.34
80	15	5	5.0±0.41	3.5±0.21	7.3±0.65	5.3±0.41	4.6±0.35	3.4±0.25	7.6±0.58	5.0±0.38
70	15	15	5.7±0.35	4.0±0.30	8.2±0.70	6.0±0.50	5.1±0.40	4.0±0.33	8.3±0.66	6.2±0.52
55	15	30	6.4±0.46	4.6±0.29	8.5±0.68	6.4±0.48	5.7±0.46	4.4±0.38	9.1±0.81	7.1±0.64
47.5	5.0	47.5	9.5±0.54	6.3±0.45	11.3±0.85	8.1±0.70	8.6±0.69	6.8±0.55	10.6±1.20	8.3±0.70
40.0	20.0	40.0	7.3±0.60	5.1±0.36	7.6±0.68	6.2±0.52	5.4±0.47	4.2±0.34	8.4±0.75	6.0±0.50
35.0	30.0	35.0	4.8±0.32	3.1±0.18	4.5±0.35	3.3±0.25	3.6±0.40	2.3±0.18	4.6±0.36	2.9±0.26
Corn Starch/ MCC	Water	Glycerol								
35.0/35.0	5	25	4.3±0.33	2.6±0.19	5.4±0.39	3.9±0.30	4.0±0.31	2.2±0.15	5.5±0.39	3.4±0.37
Corn Starch/ MCC	Water	Sorbitol								
35.5/35.5	5	24	3.5±0.38	1.9±0.08	4.3±0.31	3.0±0.21	2.5±0.19	1.4±0.09	4.3±0.28	3.0±0.33
Corn Starch/ MCC	Water	Sucrose								
34.5/34.5	5	26	6.7±0.48	4.8±0.30	8.6±0.72	6.2±0.42	5.3±0.43	3.6±0.23	8.1±0.65	6.2±0.44
Corn Starch/ MCC	Water	Xylose								
35.0/35.0	5	25	7.0±0.55	5.4±0.36	9.1±0.65	6.6±0.51	5.9±0.48	4.3±0.34	8.8±0.76	6.6±0.52

^a Calculated according to equation (5).

^b Calculated according to equation (6).