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**NTSQP**

# China National Centre for Quality Supervision & Test of Plastics Products (Beijing)

## Test Report

**NTSQP**

Sample Clients\*

POLYE MATERIALS CO., LTD

Sample Producer\*

----

Sample Name\*

PVA film

Sample Type\*

Trade Mark\*

Report Number

NTSQP[2017]C0459

Date of Report

Oct. 13, 2017



## Matters need attention

**NTSQP**

1. The client's objection, in case there is any, shall be submitted in the written form within 15days upon receipt of the test report. No acceptance shall be allowed when the objection is overdue.
2. The test report shall be invalid to have no Report Cachet when it was copied
3. The test report shall be invalid when it is incomplete.
4. The test report is responsible to the client only for the submitted sample(s) .
5. The content of the items with the symbol '\*' and Client's statement is supplied by the Client, Center is not responsible to confirm it's authenticity.
6. The Chinese and English versions have been made. Should there be any differences in interpretation, the Chinese version would be the controlling document.

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# Test Report

Report No.: NTSQP[2017]C0459

Sample No: 2016E0508

Client(s)*	POLYE MATERIALS CO., LTD	Telephone No.*	13711459571
Address*	B5 Xiongxing Industrial Park, Qingyuan city, Guangdong province, China		
Producer*	----	Contact Man*	Lydia Lee
Sample Name*	PVA film	Trade Mark*	----
Sample's Quantity	500g	Date of Production*	----
Type and specification*	----	Receiving Date	Aug. 8, 2016
Descriptions of Sample and/or Sampling	Sample was natural color film.		
No.	Item(s) Tested	Test Result(s)	Standard of Test
01	The degree of biodegradation (after 45 days), % The final degree of biodegradation (after 180 days), % (The biodegradation procedure and curve, are given in annex) (No text below this column)	17.0 73.1	ISO 14855-1:2012
Note			

Approved by: Vice Director

Reviewed by: Technician Controller

Compiled by: Editor

Date: Oct. 13, 2017

APPENDIX

**Controlled aerobic composting test-----Test Report**

Sample: PVA film Reference material: Cellulose  
 Origin of Compost: BEIJING Age of compost: 3 Months  
 Volume of test vessels: 3L

Method of CO<sub>2</sub> determination: The CO<sub>2</sub> in the exhaust air was measured directly with a continuous infrared analyser.

Reference standard: ISO14855-1:2012

Result of the test

	45d degree of biodegradation %	180d final degree of biodegradation %
Sample	17.0	73.1
Reference material	72.5	91.8

Validity criteria:

- 1) Whether the degree of biodegradation of reference material after 45day > 70%?  
 YES  NO
- 2) Dose mean CO<sub>2</sub> production in the blank vessels after 10days in the range 50mg to 150mg CO<sub>2</sub>/g volatile solids?  
 YES  NO



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Table 1 Basic Properties of samples

Samples	Appearance	Dry solids (%)	Moisture (%)	TOC in dry solid (%)	ThCO <sub>2</sub> (CO <sub>2</sub> g/100g sample)
Test material	film	98.27	1.73	42.52	155.91
Reference material	powder	99.68	0.32	42.62	156.27

Table 2 Volume of evolved CO<sub>2</sub> and rate of biodegradation

Day	(CO <sub>2</sub> ) <sub>B1</sub> g	(CO <sub>2</sub> ) <sub>B2</sub> g	D <sub>1</sub> %	(CO <sub>2</sub> ) <sub>B3</sub> g	D <sub>2</sub> %
180	62.6	143.4	91.8	114.0	73.1

(CO<sub>2</sub>)<sub>B1</sub>: volume of CO<sub>2</sub> evolved from blank vessel(CO<sub>2</sub>)<sub>B2</sub>: volume of CO<sub>2</sub> evolved from reference material(CO<sub>2</sub>)<sub>B3</sub>: volume of CO<sub>2</sub> evolved from sampleD<sub>1</sub>: reference material's rate of biodegradationD<sub>2</sub>: sample's rate of biodegradationTable 3 Volume of evolved CO<sub>2</sub> and rate of biodegradation

Day	Evolved CO <sub>2</sub> , g					Degree of biodegradation, %	
	Blank	Cellulose	2016E0508	Cellulose(actual)	2016E0508(actual)	Cellulose	2016E0508
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	3.48	4.11	3.52	0.63	0.04	0.40	0.03
2	4.45	6.92	4.88	2.47	0.43	1.58	0.28
3	7.96	10.30	8.56	2.34	0.60	1.50	0.38
4	9.97	13.25	10.88	3.28	0.91	2.10	0.58
5	11.30	16.37	12.48	5.07	1.18	3.24	0.76
6	11.68	19.51	12.93	7.83	1.25	5.01	0.80
7	12.43	21.68	13.86	9.25	1.43	5.92	0.92
8	13.94	26.06	15.61	12.12	1.67	7.76	1.07
9	15.21	29.96	16.97	14.75	1.76	9.44	1.13
10	16.87	33.60	19.08	16.73	2.21	10.71	1.42
11	19.29	37.42	21.71	18.13	2.42	11.60	1.55
12	22.21	41.18	24.95	18.97	2.74	12.14	1.76
13	25.69	44.94	28.83	19.25	3.14	12.32	2.01
14	27.62	48.72	31.00	21.10	3.38	13.50	2.17
15	31.21	52.46	34.91	21.25	3.70	13.60	2.37

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Day	Evolved CO <sub>2</sub> , g					Degree of biodegradation, %	
	Blank	Cellulose	2016E0508	Cellulose(actual)	2016E0508(actual)	Cellulose	2016E0508
16	33.72	56.24	37.51	22.52	3.79	14.41	2.43
17	38.10	60.97	42.56	22.87	4.46	14.63	2.86
18	40.51	64.23	45.65	23.72	5.14	15.18	3.30
19	42.90	66.63	48.65	23.73	5.75	15.19	3.69
20	45.27	70.27	51.35	25.00	6.08	16.00	3.90
21	46.34	73.57	52.91	27.23	6.57	17.42	4.21
22	47.54	76.90	54.95	29.36	7.41	18.79	4.75
23	48.62	80.24	56.78	31.62	8.16	20.23	5.23
24	49.92	83.56	58.25	33.64	8.33	21.53	5.34
25	51.17	86.86	60.08	35.69	8.91	22.84	5.71
26	52.44	90.22	61.90	37.78	9.46	24.18	6.07
27	53.20	95.25	63.07	42.05	9.87	26.91	6.33
28	53.96	102.09	64.54	48.13	10.58	30.80	6.79
29	54.97	109.38	66.49	54.41	11.52	34.82	7.39
30	55.96	116.36	68.24	60.40	12.28	38.65	7.88
31	56.45	121.29	69.08	64.84	12.63	41.49	8.10
32	56.70	126.58	69.56	69.88	12.86	44.72	8.25
33	56.97	130.66	70.67	73.69	13.70	47.16	8.79
34	57.14	134.98	71.56	77.84	14.42	49.81	9.25
35	57.21	139.83	72.10	82.62	14.89	52.87	9.55
36	57.26	146.00	72.68	88.74	15.42	56.79	9.89
37	57.56	150.17	74.41	92.61	16.85	59.26	10.81
38	57.73	155.16	76.45	97.43	18.72	62.35	12.01
39	57.76	158.23	77.85	100.47	20.09	64.29	12.89
40	57.77	161.12	79.38	103.35	21.61	66.14	13.86
41	57.80	164.99	80.46	107.19	22.66	68.59	14.53
42	57.84	166.14	81.20	108.30	23.36	69.30	14.98
43	57.86	167.29	82.47	109.43	24.61	70.03	15.78
44	57.89	169.51	83.25	111.62	25.36	71.43	16.27
45	57.94	171.21	84.49	113.27	26.55	72.48	17.03
46	57.97	172.53	86.09	114.56	28.12	73.31	18.04
47	58.01	174.31	87.02	116.30	29.01	74.42	18.61
48	58.03	175.04	87.73	117.01	29.70	74.88	19.05
49	58.06	176.22	88.89	118.16	30.83	75.61	19.77



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Day	Evolved CO <sub>2</sub> , g					Degree of biodegradation, %	
	Blank	Cellulose	2016E0508	Cellulose(actual)	2016E0508(actual)	Cellulose	2016E0508
50	58.08	177.36	90.36	119.28	32.28	76.33	20.70
51	58.12	178.19	92.05	120.07	33.93	76.83	21.76
52	58.16	178.79	93.97	120.63	35.81	77.19	22.97
53	58.19	179.89	95.40	121.70	37.21	77.88	23.87
54	58.21	180.39	97.15	122.18	38.94	78.19	24.98
55	58.24	180.80	98.53	122.56	40.29	78.43	25.84
56	58.28	181.20	101.09	122.92	42.81	78.66	27.46
57	58.33	181.70	102.72	123.37	44.39	78.95	28.47
58	58.37	182.16	104.32	123.79	45.95	79.22	29.47
59	58.39	182.54	105.98	124.15	47.59	79.45	30.52
60	58.42	182.77	107.37	124.35	48.95	79.57	31.40
61	58.45	182.99	109.24	124.54	50.79	79.70	32.58
62	58.49	183.18	110.70	124.69	52.21	79.79	33.49
63	58.51	183.43	111.42	124.92	52.91	79.94	33.94
64	58.55	184.00	112.72	125.45	54.17	80.28	34.74
65	58.57	184.28	113.56	125.71	54.99	80.44	35.27
66	58.61	184.60	114.38	125.99	55.77	80.62	35.77
67	58.64	185.00	116.98	126.36	58.34	80.86	37.42
68	58.67	185.57	119.17	126.90	60.50	81.21	38.80
69	58.70	186.01	121.41	127.31	62.71	81.47	40.22
70	58.74	186.94	123.50	128.20	64.76	82.04	41.54
71	58.76	187.28	125.78	128.52	67.02	82.24	42.99
72	58.80	187.62	127.80	128.82	69.00	82.43	44.26
73	58.84	188.06	129.93	129.22	71.09	82.69	45.60
74	58.86	188.76	131.16	129.90	72.30	83.13	46.37
75	58.89	189.30	132.72	130.41	73.83	83.45	47.35
76	58.92	189.91	133.99	130.99	75.07	83.82	48.15
77	58.96	190.71	135.30	131.75	76.34	84.31	48.96
78	59.00	191.14	136.56	132.14	77.56	84.56	49.75
79	59.04	191.64	138.46	132.60	79.42	84.85	50.94
80	59.08	192.18	139.98	133.10	80.90	85.17	51.89
81	59.10	192.63	141.52	133.53	82.42	85.45	52.86
82	59.15	193.28	142.28	134.13	83.13	85.83	53.32
83	59.18	193.95	143.00	134.77	83.82	86.24	53.76



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Day	Evolved CO <sub>2</sub> , g					Degree of biodegradation, %	
	Blank	Cellulose	2016E0508	Cellulose(actual)	2016E0508(actual)	Cellulose	2016E0508
84	59.21	194.48	144.27	135.27	85.06	86.56	54.56
85	59.25	195.00	145.54	135.75	86.29	86.87	55.35
86	59.28	195.72	146.54	136.44	87.26	87.31	55.97
87	59.31	196.07	147.23	136.76	87.92	87.52	56.39
88	59.36	196.45	147.84	137.09	88.48	87.73	56.75
89	59.39	196.70	148.92	137.31	89.53	87.87	57.42
90	59.42	197.08	150.19	137.66	90.77	88.09	58.22
91	59.46	197.47	151.01	138.01	91.55	88.32	58.72
92	59.49	198.00	151.63	138.51	92.14	88.64	59.10
93	59.52	198.36	152.77	138.84	93.25	88.85	59.81
94	59.57	198.60	153.84	139.03	94.27	88.97	60.46
95	59.60	198.90	155.06	139.30	95.46	89.14	61.23
96	59.63	199.05	155.73	139.42	96.10	89.22	61.64
97	59.67	199.34	156.62	139.67	96.95	89.38	62.18
98	59.70	199.40	157.70	139.70	98.00	89.40	62.86
99	59.74	199.51	158.41	139.77	98.67	89.44	63.29
100	59.78	199.72	159.10	139.94	99.32	89.55	63.70
101	59.81	199.90	159.42	140.09	99.61	89.65	63.89
102	59.85	200.04	159.75	140.19	99.90	89.71	64.08
103	59.88	200.22	160.06	140.34	100.18	89.81	64.26
104	59.91	200.39	160.63	140.48	100.72	89.90	64.60
105	59.95	200.54	161.10	140.59	101.15	89.97	64.88
106	59.99	200.71	161.87	140.72	101.88	90.05	65.35
107	60.02	200.88	162.40	140.86	102.38	90.14	65.67
108	60.06	200.94	162.93	140.88	102.87	90.15	65.98
109	60.09	201.00	163.63	140.91	103.54	90.17	66.41
110	60.12	201.07	163.90	140.95	103.78	90.20	66.56
111	60.16	201.15	164.25	140.99	104.09	90.22	66.76
112	60.20	201.28	164.58	141.08	104.38	90.28	66.95
113	60.23	201.37	164.90	141.14	104.67	90.32	67.13
114	60.27	201.44	165.22	141.17	104.95	90.34	67.31
115	60.30	201.50	165.54	141.20	105.24	90.36	67.50
116	60.33	201.57	165.86	141.24	105.53	90.38	67.69
117	60.37	201.64	166.18	141.27	105.81	90.40	67.87



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Day	Evolved CO <sub>2</sub> , g					Degree of biodegradation, %	
	Blank	Cellulose	2016E0508	Cellulose(actual)	2016E0508(actual)	Cellulose	2016E0508
118	60.41	201.71	166.41	141.30	106.00	90.42	67.99
119	60.44	201.87	166.82	141.43	106.38	90.50	68.23
120	60.48	201.94	167.38	141.46	106.90	90.52	68.57
121	60.51	202.00	167.89	141.49	107.38	90.54	68.87
122	60.54	202.07	168.17	141.53	107.63	90.57	69.03
123	60.59	202.14	168.54	141.55	107.95	90.58	69.24
124	60.62	202.20	168.91	141.58	108.29	90.60	69.46
125	60.65	202.27	169.55	141.62	108.90	90.63	69.85
126	60.69	202.34	170.02	141.65	109.33	90.64	70.12
127	60.72	202.41	170.55	141.69	109.83	90.67	70.44
128	60.75	202.46	170.88	141.71	110.13	90.68	70.64
129	60.80	202.53	171.29	141.73	110.49	90.70	70.87
130	60.83	202.60	171.94	141.77	111.11	90.72	71.27
131	60.86	202.67	172.35	141.81	111.49	90.75	71.51
132	60.90	202.73	172.60	141.83	111.70	90.76	71.64
133	60.93	202.80	172.75	141.87	111.82	90.79	71.72
134	60.96	202.86	172.83	141.90	111.87	90.80	71.75
135	61.01	202.93	172.97	141.92	111.96	90.82	71.81
136	61.04	203.01	173.05	141.97	112.01	90.85	71.84
137	61.07	203.06	173.17	141.99	112.10	90.86	71.90
138	61.11	203.13	173.34	142.02	112.23	90.88	71.98
139	61.14	203.18	173.58	142.04	112.44	90.89	72.12
140	61.17	203.23	173.69	142.06	112.52	90.91	72.17
141	61.22	203.31	173.81	142.09	112.59	90.93	72.21
142	61.25	203.36	173.95	142.11	112.70	90.94	72.29
143	61.29	203.51	174.08	142.22	112.79	91.01	72.34
144	61.32	203.63	174.21	142.31	112.89	91.07	72.41
145	61.35	203.69	174.40	142.34	113.05	91.09	72.51
146	61.39	203.88	174.57	142.49	113.18	91.18	72.59
147	61.43	203.93	174.69	142.50	113.26	91.19	72.64
148	61.46	203.98	174.82	142.52	113.36	91.20	72.71
149	61.50	204.05	174.97	142.55	113.47	91.22	72.78
150	61.53	204.13	175.01	142.60	113.48	91.25	72.79
151	61.56	204.20	175.13	142.64	113.57	91.28	72.84



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Day	Evolved CO <sub>2</sub> , g					Degree of biodegradation, %	
	Blank	Cellulose	2016E0508	Cellulose(actual)	2016E0508(actual)	Cellulose	2016E0508
152	61.60	204.26	175.22	142.66	113.62	91.29	72.88
153	61.64	204.31	175.31	142.67	113.67	91.30	72.91
154	61.67	204.38	175.36	142.71	113.69	91.32	72.92
155	61.71	204.44	175.41	142.73	113.70	91.34	72.93
156	61.74	204.49	175.45	142.75	113.71	91.35	72.93
157	61.77	204.57	175.51	142.80	113.74	91.38	72.95
158	61.81	204.65	175.57	142.84	113.76	91.41	72.97
159	61.85	204.74	175.62	142.89	113.77	91.44	72.97
160	61.88	204.86	175.66	142.98	113.78	91.50	72.98
161	61.92	204.90	175.70	142.98	113.78	91.50	72.98
162	61.95	204.96	175.75	143.01	113.80	91.51	72.99
163	61.98	205.04	175.81	143.06	113.83	91.55	73.01
164	62.02	205.10	175.86	143.08	113.84	91.56	73.02
165	62.06	205.16	175.90	143.10	113.84	91.57	73.02
166	62.09	205.22	175.93	143.13	113.84	91.59	73.02
167	62.13	205.39	176.04	143.26	113.91	91.67	73.06
168	62.16	205.44	176.11	143.28	113.95	91.69	73.09
169	62.19	205.52	176.15	143.33	113.96	91.72	73.09
170	62.24	205.60	176.19	143.36	113.95	91.74	73.09
171	62.27	205.65	176.23	143.38	113.96	91.75	73.09
172	62.30	205.69	176.26	143.39	113.96	91.76	73.09
173	62.34	205.74	176.31	143.40	113.97	91.76	73.10
174	62.37	205.76	176.35	143.39	113.98	91.76	73.11
175	62.40	205.80	176.39	143.40	113.99	91.76	73.11
176	62.45	205.85	176.43	143.40	113.98	91.76	73.11
177	62.48	205.89	176.46	143.41	113.98	91.77	73.11
178	62.51	205.92	176.51	143.41	114.00	91.77	73.12
179	62.55	205.96	176.55	143.41	114.00	91.77	73.12
180	62.58	206.01	176.59	143.43	114.01	91.78	73.13



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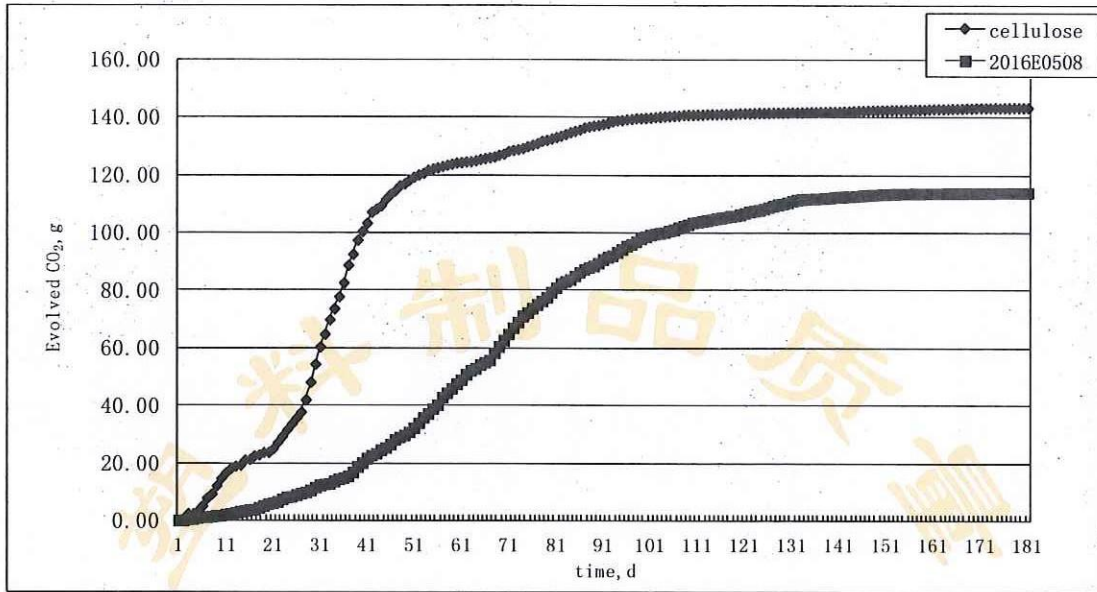


Fig.1 Curve of Evolved CO<sub>2</sub>

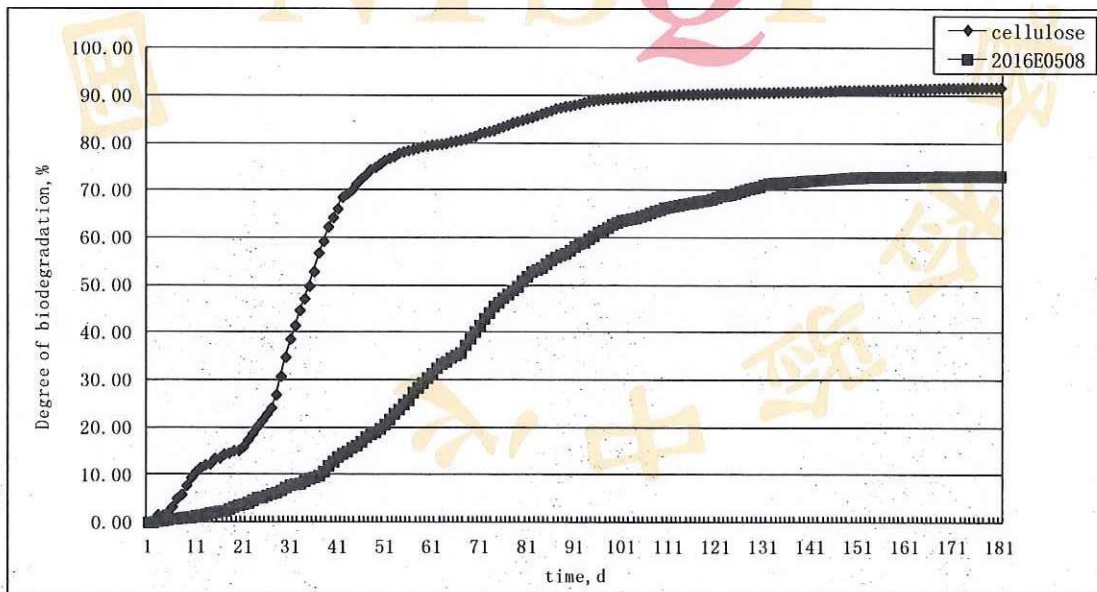


Fig.2 Curve of Degree of Biodegradation

—End—

