Test Report **No: XMCPCH200300350** **Date: Oct 14, 2020**

Client name: MK HEALTH CARE PRODUCTS CO., LTD
Client address: UNIT 704, DFC, GAOLIN MIDDLE ROAD, HULI AREA, XIAMEN, CHINA

Sample name: Bamboo baby diaper
Batch No./Date: /
Manufacturer: /

The above information and samples are provided and confirmed by the customer, and SGS is not responsible for confirming the accuracy, appropriateness and/or completeness of the information provided by the customer.

SGS job No.: XMCPCH200300350
SGS reference No.: KYM200016R/ XMCPCH200300330S1
Date of receipt: Mar 27, 2020
Testing period: Mar 30, 2020 ~ Sep 29, 2020

TEST(S) REQUESTED:
Selected test(s) as requested by applicant:
Determining Aerobic Biodegradation of Sample Under Controlled Composting Conditions *

TEST METHOD(S):
ISO 14855-1-2012 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions — Method by analysis of evolved carbon dioxide —Part 1: General method

TEST RESULT(S):
Please refer to next page(s)

Remark: *The test was carried out by external laboratory assessed as competent.
The test report is in English and maybe translated into other languages, The English version shall prevail.

THE REPORT WAS COPIED FROM THE REPORT WHICH NO. WAS XMCPCH200300330S1.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested, and this document cannot be used for publicity without approval of the Company, not be allowed to copy testing report (except for copy of full text) without written approval.

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Xiamen Branch

.....
Demi Xu
Approved Signatory

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1 Summary

The purpose of this test was to determine the ultimate aerobic biodegradability of test item（XMCPCH200300330 bamboo diaper）under controlled composting conditions. In a 2 liters testing system, test item was used as a source of nutrients and the test mixture is aerated with carbon dioxide free air under controlled rate. The percentage biodegradation was determined by measuring evolved carbon dioxide.

Under the present conditions of this study, with a 147-day period of testing, the average percentage biodegradation of reference item (Thin-layer Chromatograph grade Cellulose) was 90.1% while percentage biodegradation of test item was 70.1%.

During the first 10 days of testing, the compost inoculum produced 77.7 mg CO_2 per gram of volatile solids, within the range of 50 to 150 mg CO_2 per gram of volatile solids, the first ten days of testing is therefore considered to be valid. The percentage biodegradation of reference item Thin-layer Chromatograph grade Cellulose was 76.8% after 45th days of testing, greater than 70%，the testing is therefore considered to be valid.

2 Introduction

2.1 Study Title

Determination of the Ultimate Aerobic Biodegradability of XMCPCH200300330 bamboo diaper under Controlled Composting Conditions.

2.2 Objective

To determine the ultimate aerobic biodegradability of test item XMCPCH200300330 bamboo diaper under controlled composting conditions.

2.3 Principle

The test method determines the ultimate biodegradability and degree of disintegration of test item under conditions simulating an intensive aerobic composting process. The inoculum used consists of stabilized, mature compost derived, if possible, from composting the organic fraction of solid municipal waste.

The test item is mixed with the inoculum and introduced into a static composting vessel where it is intensively composted under optimum oxygen, temperature and moisture conditions for a test period not exceeding 6 months.

During the aerobic biodegradation of the test item, carbon dioxide, water, mineral salts and new microbial cellular constituents (biomass) are the ultimate biodegradation products. The carbon dioxide produced is continuously monitored, or measured at regular intervals, in test and blank vessels to determine the cumulative carbon dioxide production. The percentage biodegradation is given by the ratio of the carbon dioxide produced from the test item to the maximum theoretical amount of carbon dioxide that can be produced from the test item. The maximum theoretical amount of carbon dioxide produced is calculated from the measured total organic carbon (TOC) content. The percentage biodegradation does not include that amount of carbon converted to new cell biomass which is not metabolized in turn to carbon dioxide during the course of the test.

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2.4 Study Number

KYM200016R

3 Reagents and Apparatus

3.1 Test item

Identity: XMCPCH200300330 bamboo diaper
Physical Character: Solid
Storage: Room temperature
Above-mentioned information was supplied by sponsor.
Sample number: KM200011-01

3.2 Reference item

Identity: TLC (thin-layer chromatography) grade cellulose
Reference number：R20001
Batch number: 20190719
Source: Sinopharm Chemical Reagent Co.,Ltd
Molecular formula: $(C_6H_{10}O_5)_n$
Molecular Weight: $(162.14)_n$
CAS No.：9004-34-6
Physical Characters: White crystalline powder
Purity: TLC (thin-layer chromatography) grade
Storage conditions: Room temperature, keep dry

3.3 Inoculum

Name:AerobicCompost
Source: Self-control.
Age of the compost: 3 months
Treatment prior to use: The coarse particles and inert matters were removed, and then sieved on a screen of 0.5cm.

3.4 Test Conditions

The test was conducted at 58℃±2℃, weak light, and under steam conditions. There were no conditions that would interfere the growth of microbes.

3.5 Apparatus

(1) Reaction equipment;
(2) Pressurized-Air System;
(3) Gas absorption device;
(4) Gas rotameter;
(5) Device for increasing humidity of carbon dioxide free air;
(6) Device for preparing carbon dioxide free air;

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(7) Portable intelligent gas detection and alarming device;
(8) Thermostat water bath cauldron

4 Preparation Prior to Test

4.1 Preparation of test containers

Test containers were selected, thoroughly cleaned and well prepared.

4.2 Preparation of the inoculum

After coarse particles were removed and the compost was sieved, the parameters such as pH, moisture content, total dry solids, volatile solids, total nitrogen and total organic carbon were measured for compost quality control. The results were listed below: pH 7.25, moisture content 41.3%, total dry solids 58.7%, volatile solids 45.1% (of dry solid), total nitrogen 1.63% and total organic carbon 21.83%.Adding water to adjust the amounts of the total dry solids to the content of the wet solids is 50.5% before the compost is used.

4.3 Absorption bottles

There were 3 absorption bottles (each containing 400mL of 20g/L sodium hydroxide solution) connected in series with a reaction vessel.

4.4 Number of reaction vessels

a) Three vessels for the test item (mat-1, mat-2, mat-3);
b) Three vessels for the positive reference item (pos-1, pos-2, pos-3);
c) Three vessels for the blank (com-1, com-2, com-3).

4.5 Preparation of test item

The parameter such as total organic carbon and moisture content were measured for test item. The results were listed as below, total organic carbon 47.35% and moisture content 5.5%. The ratio of the dry mass of the inoculum to the dry mass of the test material shall be about 6:1. Total 360g inoculum (dry mass) and 60g test item (dry mass) were added in the reaction vessel for testing.

4.6 Preparation of reference item

Total organic carbon and moisture content were also measured for reference item and the total organic carbon was determined as 42.34%, moisture content was 4.4%.

5 Test Method

(1) The test was conducted at 58℃±2℃, with bubbling CO_2-free air through the test mixture at a rate of 0.05 L/min.
(2) The oxygen concentration in reaction vessel was measured twice daily in the first week of testing. Afterwards, the measurement frequency can be reduced. Adjust air flow as needed. Measure the amount of carbon dioxide absorption once a day during the first 45 days, and about twice per week after 45 days.

(3) CO_2 determination (Sodium hydroxide absorption method):

CO_2 was collected by an absorption bottle (containing sodium hydroxide solution) which was connected with a backflow preventer in the reaction vessel. When the absorption bottle with CO_2 was taken away, the next absorption (containing sodium hydroxide solution) in the series was connected with the backflow preventer while a new absorption bottle (containing sodium hydroxide solution) was added in the series. The absorption bottle with CO_2 was titrated with HCl standard solution.

(4) The air tightness of the test device was checked every day.

(5) The composting vessels were shaken and mixed well once weekly. Mixture pH was determined and the parameters such as smell of the exhaust air, humidity of the compost, color, fungal development, structure change and disintegration of the test item were determined. Pictures of test item before test, and after 75-day of testing were shown in Figure 6-10, respectively.

(6) Calculation of the theoretical amount of carbon dioxide

Calculate the theoretical amount of carbon dioxide $ThCO_2$, in grams per vessel, which can be produced by the test material using Equation (1):

$$ThCO_2 = M_{TOT} \times C_{TOT} \times 44/12 \quad (1)$$

where

M_{TOT} is the total dry solids, in grams, in the test material introduced into the composting vessels at the start of the test;

C_{TOT} is the proportion of total organic carbon in the total dry solids in the test material, in grams per gram;

44 and 12 are the molecular mass of carbon dioxide and the atomic mass of carbon, respectively.

(7) Calculation of the percentage biodegradation

From the cumulative amounts of carbon dioxide released, calculate the percentage biodegradation Dt of the test material for each measurement interval using Equation (2):

$$Dt = ((CO_2)_T - (CO_2)_B) / ThCO_2 \times 100 \quad (2)$$

where

$(CO_2)_T$ is the cumulative amount of carbon dioxide evolved in each composting vessel containing test material, in grams per vessel;

$(CO_2)_B$ is the mean cumulative amount of carbon dioxide evolved in the blank vessels, in grams per vessel;

$ThCO_2$ is the theoretical amount of carbon dioxide which can be produced by the test material, in grams per vessel.

If the differences between the individual results are less than 20 %, calculate the average percentage biodegradation. If this is not the case, use the values for each composting vessel separately.

Use the same equation to calculate the degree of biodegradation of the reference material.

6 Criteria of Results Justification

6.1 The degree of biodegradation of the reference item is more than 70% after 45 days of testing.

6.2 Prepare the curves of cumulative amount of carbon dioxide production against time and the curves of percentage biodegradation against time for the test item and reference item respectively.

6.3 The inoculum in the blank has produced more than 50mg but less than 150mg of carbon dioxide per gram of volatile solids (mean values) after 10 days of testing.

7 Results

Table 1. Calculation of the theoretical amount of carbon dioxide ($ThCO_2$)

Reaction vessels	Inoculum			Reference item (Thin-layer Chromatograph grade Cellulose)			XMCPCH200300330		
No.	1	2	3	4	5	6	7	8	9
Wet solids of inoculum, g	613.30	613.31	613.30	613.31	613.30	613.29	613.30	613.31	613.31
Total dry solids of inoculum, g	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
Wet solids of reference item or test item, g	/	/	/	62.76	62.77	62.76	63.49	63.51	63.50
M_{TOT}, g	/	/	/	60.0	60.0	60.0	60.0	60.0	60.0
TOC,%		21.83			42.34			47.35	
C_{TOT}, g/g		0.2183			0.4234			0.4735	
$ThCO_2$, g/vessel	/	/	/	93.2	93.2	93.2	104.2	104.2	104.2

Note: $ThCO_2 = M_{TOT} \times C_{TOT} \times 44/12$ (See section 5)

7.1 Cumulative CO_2 production and percentage degradation during the test period (Table 2)

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Table 2. Cumulative CO_2 production and percentage degradation during the test

Date	Time (Day)	Cumulative CO_2 production (g/vessel)					Percentage biodegradation (%)			
		Blank	Reference material		XMCPCH200300330		Reference material		XMCPCH200300330	
		average	$(CO_2)Cp$	average	$(CO_2)M$	average	Dp%	average	DM%	average
20200418	1	1.56	1.37	1.68	1.66	2.26	-0.2	0.1	0.1	0.7
			1.94		2.23		0.4		0.6	
			1.74		2.88		0.2		1.3	
20200419	2	3.04	3.80	3.76	4.73	5.29	0.8	0.8	1.6	2.2
			3.64		5.08		0.6		2.0	
			3.82		6.08		0.8		2.9	
20200420	3	4.68	6.85	6.99	7.66	8.52	2.3	2.5	2.9	3.7
			7.09		8.24		2.6		3.4	
			7.04		9.66		2.5		4.8	
20200421	4	5.52	10.11	10.52	11.04	11.84	4.9	5.4	5.3	6.1
			10.83		11.59		5.7		5.8	
			10.61		12.90		5.5		7.1	
20200422	5	6.41	14.45	14.61	14.70	16.42	8.6	8.8	8.0	9.6
			15.18		16.79		9.4		10.0	
			14.21		17.78		8.4		10.9	
20200423	6	7.84	19.83	19.29	18.43	20.34	12.9	12.3	10.2	12.0
			19.94		20.83		13.0		12.5	
			18.11		21.75		11.0		13.3	
20200424	7	9.20	24.58	23.67	21.37	23.44	16.5	15.5	11.7	13.7
			24.62		24.01		16.6		14.2	
			21.83		24.94		13.6		15.1	
20200425	8	10.27	29.56	28.31	25.79	29.13	20.7	19.4	14.9	18.1
			29.42		30.20		20.6		19.1	
			25.94		31.39		16.8		20.3	
20200426	9	11.45	33.40	32.71	29.61	32.35	23.6	22.8	17.4	20.1
			34.48		33.27		24.7		20.9	
			30.25		34.16		20.2		21.8	
20200427	10	12.61	38.26	37.35	33.13	35.50	27.5	26.6	19.7	22.0
			39.32		36.28		28.7		22.7	
			34.48		37.10		23.5		23.5	

Table 2. Cumulative CO_2 production and percentage degradation during the test

Date	Time (Day)	Cumulative CO_2 production (g/vessel)					Percentage biodegradation (%)			
		Blank	Reference material		XMCPCH200300330		Reference material		XMCPCH200300330	
		average	$(CO_2)_{Cp}$	average	$(CO_2)_M$	average	D_p%	average	D_M%	average
20200428	11	13.85	44.46	43.26	36.19	38.37	32.9	31.6	21.4	23.5
			44.77		38.98		33.2		24.1	
			40.55		39.95		28.7		25.0	
20200429	12	15.09	48.05	46.35	39.31	41.02	35.4	33.6	23.2	24.9
			48.09		41.50		35.4		25.3	
			42.92		42.25		29.9		26.1	
20200430	13	16.30	53.45	50.63	41.92	43.83	39.9	36.8	24.6	26.4
			52.10		44.38		38.4		26.9	
			46.33		45.18		32.2		27.7	
20200501	14	17.40	57.95	54.32	44.80	46.65	43.5	39.6	26.3	28.1
			55.48		47.04		40.9		28.4	
			49.52		48.12		34.5		29.5	
20200502	15	18.83	61.52	57.67	48.19	50.06	45.8	41.7	28.2	30.0
			59.00		50.29		43.1		30.2	
			52.49		51.71		36.1		31.5	
20200503	16	19.86	64.43	60.43	51.83	53.47	47.9	43.6	30.7	32.3
			61.09		54.13		44.3		32.9	
			55.77		54.45		38.6		33.2	
20200504	17	20.77	67.39	63.67	55.35	56.94	50.0	46.0	33.2	34.7
			64.20		58.04		46.6		35.8	
			59.42		57.42		41.5		35.2	
20200505	18	21.81	69.80	66.71	58.40	59.92	51.5	48.2	35.1	36.6
			67.23		61.49		48.7		38.1	
			63.10		59.88		44.3		36.5	
20200506	19	22.57	72.30	69.55	60.46	62.70	53.4	50.4	36.4	38.5
			70.00		64.70		50.9		40.4	
			66.36		62.95		47.0		38.7	
20200507	20	23.28	75.51	72.75	62.73	64.91	56.1	53.1	37.9	39.9
			73.12		66.78		53.5		41.7	
			69.62		65.21		49.7		40.2	

Table 2. Cumulative CO_2 production and percentage degradation during the test

Date	Time (Day)	Cumulative CO_2 production (g/vessel)					Percentage biodegradation (%)			
		Blank	Reference material		XMCPCH200300330		Reference material		XMCPCH200300330	
		average	$(CO_2)_{Cp}$	average	$(CO_2)_M$	average	D_p%	average	D_M%	average
20200508	21	23.96	78.53	76.21	64.36	66.84	58.6	56.1	38.8	41.1
			76.40		68.79		56.3		43.0	
			73.70		67.37		53.4		41.6	
20200509	22	24.84	81.69	79.46	66.03	68.63	61.0	58.6	39.5	42.0
			79.61		71.07		58.8		44.4	
			77.09		68.80		56.1		42.2	
20200510	23	25.76	84.61	82.71	67.75	70.46	63.2	61.1	40.3	42.9
			82.85		73.09		61.3		45.4	
			80.66		70.56		58.9		43.0	
20200511	24	26.77	87.00	85.56	69.52	72.32	64.7	63.1	41.0	43.7
			85.68		75.08		63.2		46.4	
			83.99		72.37		61.4		43.8	
20200512	25	27.74	88.63	87.35	71.17	74.14	65.4	64.0	41.7	44.5
			87.18		76.86		63.8		47.1	
			86.22		74.40		62.8		44.8	
20200513	26	28.59	90.66	89.67	73.17	76.03	66.6	65.6	42.8	45.5
			89.09		78.69		64.9		48.1	
			89.27		76.23		65.1		45.7	
20200514	27	29.33	92.27	91.63	74.67	77.71	67.6	66.9	43.5	46.4
			90.50		80.92		65.7		49.5	
			92.11		77.54		67.4		46.3	
20200515	28	30.31	93.80	93.51	75.98	78.97	68.1	67.8	43.8	46.7
			92.24		82.40		66.5		50.0	
			94.51		78.53		68.9		46.3	
20200516	29	31.29	95.93	95.80	77.53	80.69	69.4	69.2	44.4	47.4
			94.18		84.22		67.5		50.8	
			97.30		80.31		70.9		47.0	
20200517	30	32.19	97.29	97.36	78.59	81.74	69.9	70.0	44.5	47.6
			95.67		85.23		68.1		50.9	
			99.11		81.41		71.8		47.2	

Table 2. Cumulative CO_2 production and percentage degradation during the test

Date	Time (Day)	Cumulative CO_2 production (g/vessel)					Percentage biodegradation (%)			
		Blank	Reference material		XMCPCH200300330		Reference material		XMCPCH200300330	
		average	$(CO_2)_{Cp}$	average	$(CO_2)_M$	average	D_p%	average	D_M%	average
20200518	31	33.07	99.16	99.11	79.56	82.68	70.9	70.9	44.6	47.6
			97.42		86.39		69.1		51.2	
			100.76		82.08		72.7		47.0	
20200519	32	33.95	100.92	100.93	80.40	83.98	71.9	71.9	44.6	48.0
			98.97		88.17		69.8		52.0	
			102.90		83.37		74.0		47.4	
20200520	33	34.57	101.86	102.03	81.94	85.52	72.2	72.4	45.5	48.9
			100.22		89.54		70.5		52.7	
			104.02		85.08		74.6		48.5	
20200521	34	35.21	103.00	103.28	82.95	86.86	72.8	73.1	45.8	49.6
			101.50		90.98		71.2		53.5	
			105.33		86.65		75.3		49.4	
20200522	35	35.98	104.11	104.52	83.91	88.27	73.1	73.6	46.0	50.2
			102.92		92.55		71.8		54.3	
			106.52		88.34		75.7		50.2	
20200523	36	36.75	105.21	105.62	85.26	89.65	73.5	73.9	46.6	50.8
			103.97		93.88		72.1		54.8	
			107.68		89.81		76.1		50.9	
20200524	37	37.37	105.90	106.30	85.87	90.45	73.6	74.0	46.5	50.9
			104.71		94.65		72.3		55.0	
			108.28		90.82		76.1		51.3	
20200525	38	38.09	106.45	107.02	86.69	91.23	73.4	74.0	46.6	51.0
			105.38		95.38		72.2		55.0	
			109.22		91.64		76.4		51.4	
20200526	39	39.09	107.65	108.19	88.36	92.73	73.6	74.2	47.3	51.5
			106.62		96.76		72.5		55.3	
			110.30		93.07		76.5		51.8	
20200527	40	39.78	108.63	109.35	89.86	94.23	73.9	74.7	48.1	52.2
			107.62		98.15		72.8		56.0	
			111.81		94.67		77.3		52.7	

Table 2. Cumulative CO_2 production and percentage degradation during the test

Date	Time (Day)	Cumulative CO_2 production (g/vessel)					Percentage biodegradation (%)			
		Blank	Reference material		XMCPCH200300330		Reference material		XMCPCH200300330	
		average	$(CO_2)_{Cp}$	average	$(CO_2)_M$	average	D_p%	average	D_M%	average
20200528	41	40.58	109.98	110.62	91.25	95.56	74.5	75.2	48.6	52.7
			109.00		99.30		73.4		56.3	
			112.90		96.12		77.6		53.3	
20200529	42	41.23	110.92	111.49	92.33	96.53	74.8	75.4	49.0	53.1
			109.75		100.21		73.5		56.6	
			113.80		97.07		77.9		53.6	
20200530	43	41.96	111.84	112.52	93.54	97.69	75.0	75.7	49.5	53.5
			110.85		101.25		73.9		56.9	
			114.88		98.27		78.3		54.0	
20200531	44	42.90	113.45	114.21	95.49	99.50	75.7	76.5	50.5	54.3
			112.35		102.80		74.5		57.5	
			116.83		100.21		79.4		55.0	
20200601	45	43.43	114.07	114.95	96.52	100.40	75.8	76.8	50.9	54.7
			113.10		103.52		74.8		57.7	
			117.69		101.16		79.7		55.4	
20200604	48	45.30	116.43	117.18	98.08	102.44	76.4	77.2	50.7	54.8
			115.19		105.72		75.0		58.0	
			119.92		103.51		80.1		55.9	
20200609	53	47.92	120.55	121.01	101.87	106.08	78.0	78.5	51.8	55.8
			118.81		108.85		76.1		58.4	
			123.66		107.53		81.3		57.2	
20200612	56	49.93	124.12	124.31	105.92	109.16	79.6	79.8	53.7	56.8
			122.59		111.84		78.0		59.4	
			126.22		109.73		81.9		57.4	
20200616	60	51.02	125.87	126.06	109.29	111.67	80.4	80.6	55.9	58.2
			124.49		113.62		78.9		60.1	
			127.83		112.09		82.5		58.6	
20200619	63	52.15	127.22	128.38	111.72	114.07	80.6	81.8	57.2	59.4
			127.31		115.27		80.7		60.6	
			130.60		115.21		84.2		60.5	

Table 2. Cumulative CO_2 production and percentage degradation during the test

Date	Time (Day)	Cumulative CO_2 production (g/vessel)					Percentage biodegradation (%)			
		Blank	Reference material		XMCPCH200300330		Reference material		XMCPCH200300330	
		average	$(CO_2)_{Cp}$	average	$(CO_2)_M$	average	D_p%	average	D_M%	average
20200622	66	53.65	128.75	130.32	114.95	117.09	80.6	82.3	58.8	60.9
			129.92		118.32		81.9		62.0	
			132.29		118.02		84.4		61.8	
20200625	69	55.56	130.24	132.22	118.20	119.99	80.2	82.3	60.1	61.8
			132.38		120.32		82.5		62.1	
			134.04		121.46		84.3		63.2	
20200630	74	58.10	132.65	134.67	121.53	123.01	80.0	82.2	60.9	62.3
			135.20		122.91		82.8		62.2	
			136.15		124.60		83.8		63.8	
20200701	75	59.00	133.59	135.76	124.32	125.16	80.1	82.4	62.7	63.5
			136.57		124.85		83.3		63.2	
			137.13		126.32		83.9		64.6	
20200703	77	60.55	135.96	137.94	126.46	127.29	80.9	83.1	63.3	64.0
			138.59		126.89		83.8		63.6	
			139.26		128.52		84.5		65.2	
20200707	81	62.44	138.95	140.49	128.76	129.67	82.1	83.8	63.6	64.5
			140.94		129.24		84.3		64.1	
			141.59		131.02		85.0		65.8	
20200710	84	64.14	141.23	142.77	130.83	131.99	82.8	84.4	64.0	65.1
			143.18		131.48		84.8		64.6	
			143.91		133.67		85.6		66.7	
20200714	88	66.09	143.14	144.68	132.41	134.15	82.7	84.4	63.6	65.3
			145.20		133.88		84.9		65.0	
			145.70		136.16		85.5		67.2	
20200717	91	67.88	145.31	146.97	134.47	136.24	83.1	84.9	63.9	65.6
			147.61		136.23		85.6		65.6	
			148.00		138.02		86.0		67.3	

Table 2. Cumulative CO_2 production and percentage degradation during the test

Date	Time (Day)	Cumulative CO_2 production (g/vessel)					Percentage biodegradation (%)			
		Blank	Reference material		XMCPCH200300330		Reference material		XMCPCH200300330	
		average	$(CO_2)_{Cp}$	average	$(CO_2)_M$	average	D_p%	average	D_M%	average
20200721	95	69.36	147.40	149.46	136.71	138.44	83.8	86.0	64.6	66.3
			150.25		138.53		86.8		66.4	
			150.72		140.09		87.3		67.9	
20200830	135	88.94	170.27	171.53	159.51	161.34	87.3	88.7	67.7	69.5
			171.94		161.77		89.1		69.9	
			172.38		162.74		89.6		70.8	
20200901	137	89.82	171.15	172.30	160.46	162.23	87.3	88.5	67.8	69.5
			172.61		162.74		88.9		70.0	
			173.14		163.48		89.4		70.7	
20200904	140	91.83	174.07	174.91	162.75	165.45	88.3	89.2	68.1	69.8
			175.23		165.26		89.5		70.5	
			175.44		165.59		89.8		70.8	
20200908	144	93.53	176.05	176.95	164.71	166.37	88.6	89.5	68.3	69.9
			177.60		167.21		90.2		70.7	
			177.19		167.19		89.8		70.7	
20200911	147	95.30	178.41	179.24	166.71	168.32	89.2	90.1	68.5	70.1
			179.89		169.15		90.8		70.8	
			179.42		169.10		90.3		70.8	

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7.3 The curves of cumulative carbon dioxide production against time for the reference item (Figure 1) and test item (Figure 2)

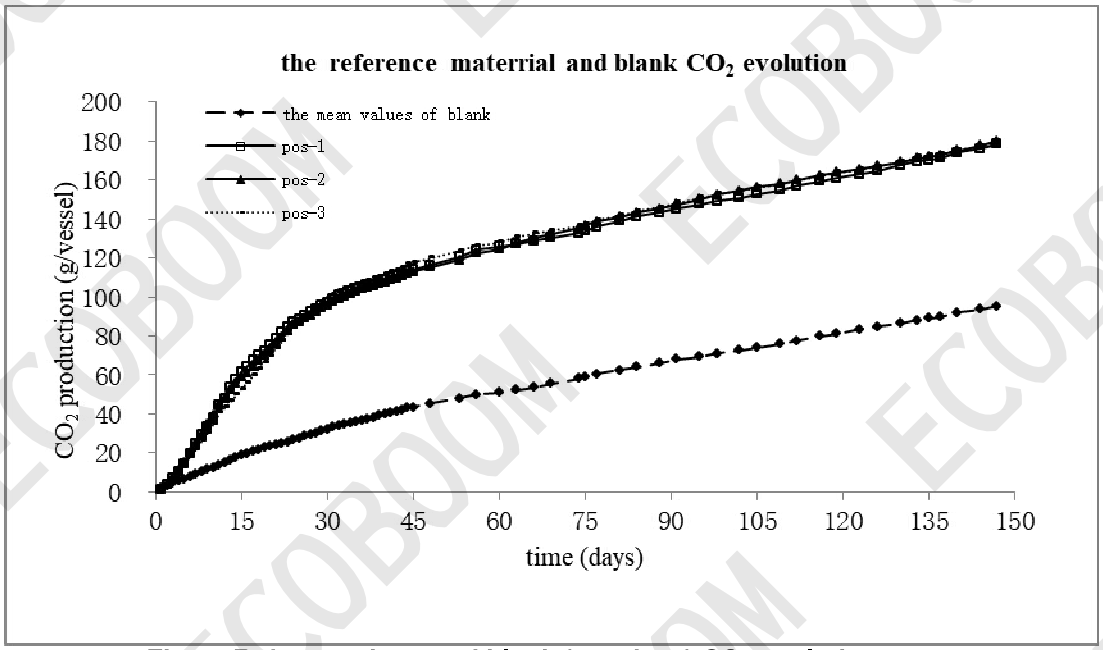

Fig. 1: Reference item and blank (147 days) CO_2-evolution curve

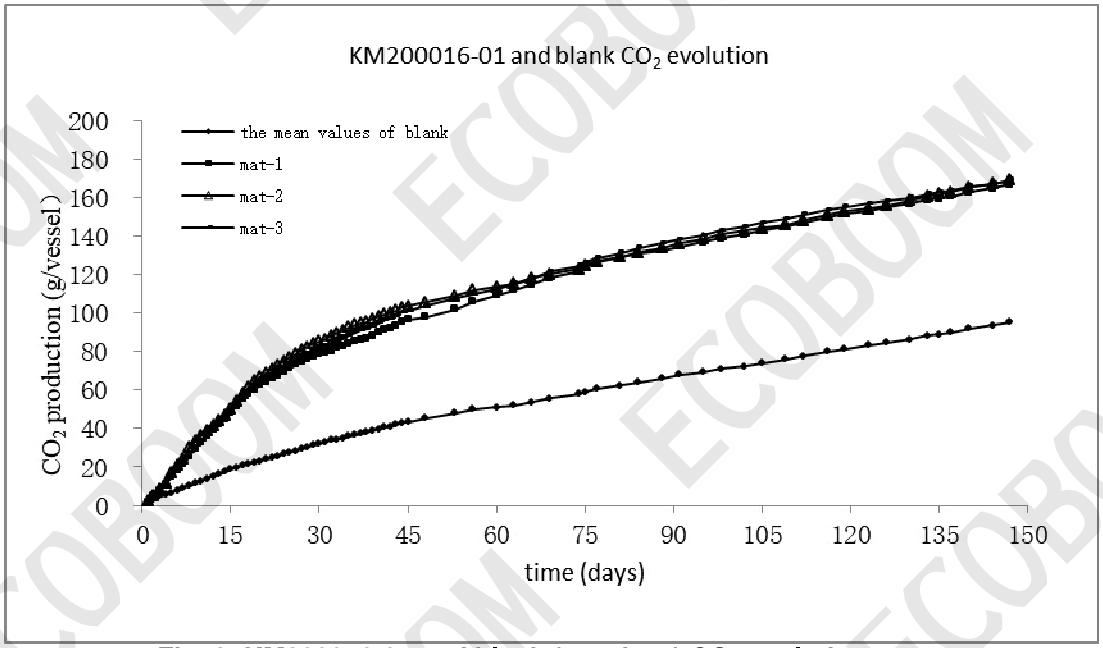

Fig. 2: KM200016-01 and blank (147 days) CO_2-evolution curve

7.4 The curves of percentage biodegradation against time for the reference item (Figure 3, Figure 5) and test item (Figure 4, Figure 5)

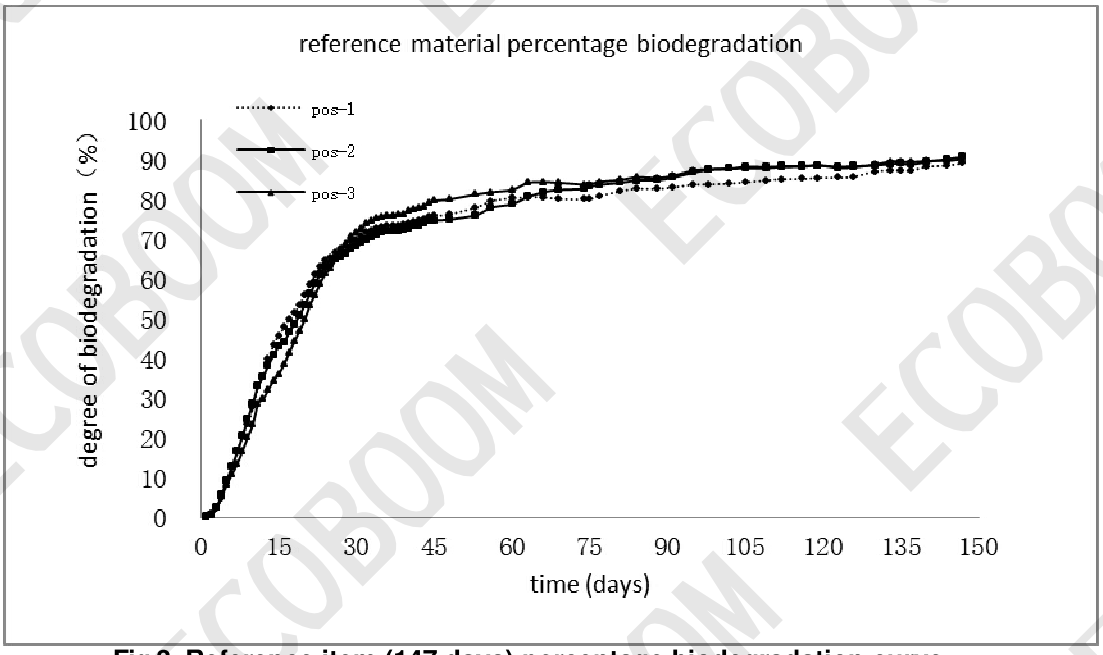

Fig.3: Reference item (147 days) percentage biodegradation curve

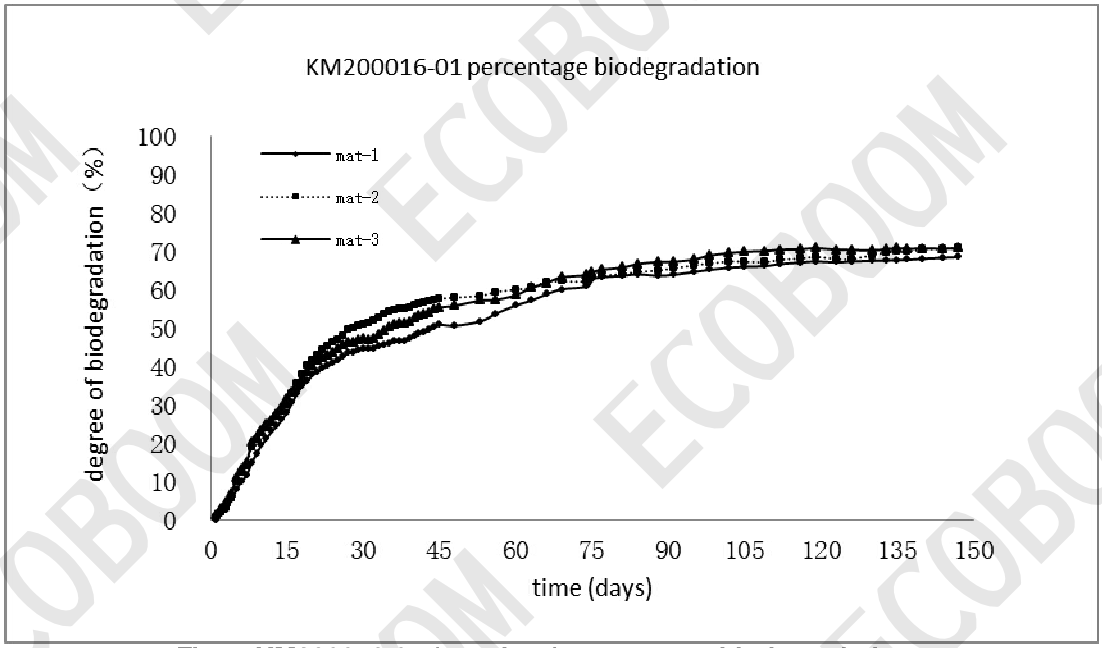

Fig. 4: KM200016-01 (147 days) percentage biodegradation curve

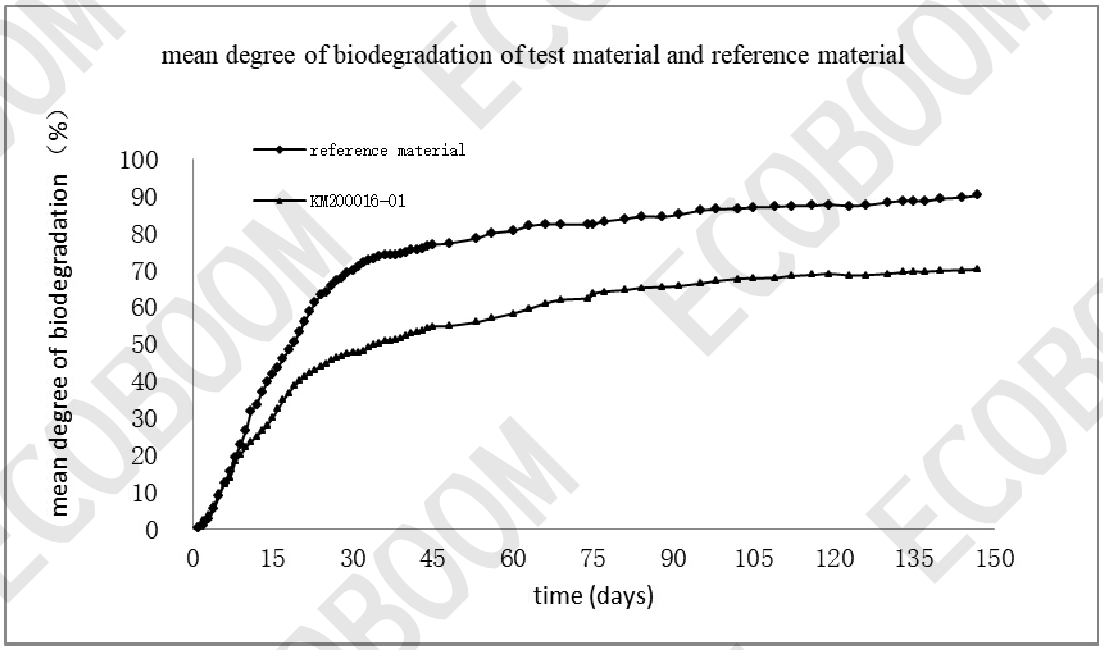

Fig. 5 : The mean values (147 days) of percentage biodegradation curve of reference item and test item

7.5 Results

(1) Percentage biodegradation of three replicates of reference item was 89.2%, 90.8% and 90.3% after147 days of testing, respectively, and the mean value was 90.1%. The differences between the individual values of three replicates of reference item were 1.0%, 0.8% and 0.2%. All were less than 20%.

(2) Percentage biodegradation of three replicates of test item was 68.5%,70.8% and 70.8% after 147 days of testing, respectively, and the mean value was 70.1%. The differences between the individual values of three replicates of test item were 2.2%, 1.1% and 1.1%. All were less than 20%.

8 Quality Control

(1) During the first 10 days of testing, the compost inoculum produced 77.7mg CO_2 per gram of volatile solids, within the range of 50 to 150 mg CO_2 per gram of volatile solids.

(2) The differences of percentage biodegradation between the individual values of three replicates for reference item were less than 20% at the end of the test.

(3) The percentage degradation of reference item Thin-layer Chromatograph grade Cellulose was 76.8% after 45th days of testing, greater than 70%.

9 Guideline

(1)、ISO 14855-1:2012 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions - Method by analysis of evolved carbon dioxide - Part 1: General method.

Appendices: Test pictures (Note: The color of the sample may deviate from their pictures due to lighting and the use of different monitors.)

Fig. 6: Test Sample picture of KM200016-01

Fig. 7: The picture of KM200016-01 before test

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Fig. 8: The picture of KM200016-01 and compost before test (mat-1)

Fig. 9 : The picture of KM200016-01 and compost after test (147 days, mat-1)

Fig. 10 : The picture of washed KM200016-01 after test (147 days)

*** End of Report ***

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