202219003802

中国认可
国际互认
检测
TESTING
CNAS L2346

Foshan Ceramics Research Institute Testing Co.,Ltd.

Test Report

Applicant:	**Green Packaging Technology（Jiangsu）Co. Ltd**
Sample Name:	**Biodegradable PE/PA Film (75 μ m)**
Report Number:	**N0004359/OX220401-014-02**
Date:	**2022/07/08**

Laboratory address:	**No.18 Shiwan liuyuan Road, Chancheng District, Foshan City, Guangdong**
Contact number:	**（Business acceptance）0757-82273883、 0757-82668329** **（Inquire report）0757-82273885、 0757-82706280** **（Query& Complaint）0757-82273885、 0757-82706280**
Fax:	**0757-82783901**
Post:	**528000**
Web:	**www.fcri.com.cn**
E-mail:	**TEST@fcri.com**

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Test Report

中国认可 国际互认 检测 TESTING CNAS L2346

Name of Sample	Biodegradable PE/PA Film (75 μ m)	Shape of Sample	Solid
Applicant	Green Packaging Technology（Jiangsu）Co. Ltd	Received Date	2022/04/01
Test Period	2022/04/01~2022/06/07	Reported Date	2022/07/08
Testing Category	Percentage biodegradation		
Test Standard	GB/T 33797-2017/ISO 15985:2014 Plastics—Determination of the ultimate anaerobic biodegradation under high-solids anaerobic-digestion conditions—Method by analysis of released biogas		
Client Information	Address：Building 1，No.199 Hongxi Road, Wujin District, Changzhou, Jiangsu, China Contact Person：Mr Tang Telephone：13901648731		

Results of Inspection

Material name/ Number	Test Period（days）	Percentage biodegradation（%）	Relative percentage biodegradation（%）
Reference material (TLC grade cellulose)	60	81.0	/
Biodegradable PE/PA Film (75 μ m) /OX220401-014		2.4	3.0
Validity of results	(1) The degree of biodegradation of the reference material is more than 70 % after 15 days：☑ yes / ☐ no (2) The difference between the percentage biodegradation of the reference material in the different vessels is less than 20 % of the mean value on the 60th day of the test：☑ yes / ☐ no		

Note：

1. The relative percentage biodegradation is the rate of percentage biodegradation of test material to reference material.
2. The following attached page of test report listed more detailed information.

statement：
1.The results in this report apply to the samples only.
2.The Report is valid with the inspection organization stamp.
3.Tell us in 15 days since you received the report if you had any question with the test results.

Stamp: 佛山市陶瓷研究所检测有限公司 检验检测专用章 **Authorized Organization:** 许治红 **Approval:** 黄昭辉

Attached page of test report

1.Information of inoculum, test material and reference material

Table 1. Basic information sheet

Item	Inoculum	Reference material/ TLC (thin-layer chromatography) grade cellulose	Test material/ OX220401-014
pH	8.17	/	/
Moisture content（%）	57.0	4.6	0.5
Total dry solid content（%）	43.0	95.4	99.5
Volatile solids content（%）	30.6	100.0	99.5
Total organic carbon content（%）	12.71	44.49	83.51
Volatile fatty acids (g/kg of wet mass)	0.02	/	/
Ionized-ammonia nitrogen (g/kg of wet mass)	0.74	/	/

2.Test system information

（1）Incubation in diffused light in an enclosure that is maintained at 52℃±2℃. The volume of the reaction container is 2 liters.

（2）Source of inoculum: Lab self-made anaerobic inoculum using pretreated household waste as the sole feedstock. The age of the inoculum: 4 months, undergo a short post-fermentation of 7days at 52℃±2℃ before test .

（3）Reference material/ TLC (thin-layer chromatography) grade cellulose：the molecular formula is $(C_6H_{10}O_5)$ n, the molecular weight is (162.14) n, white crystalline powder.

（4）The test method is designed to be an optimized simulation of an intensive anaerobic digestion process and determines the ultimate biodegradability of a test material under high-solids anaerobic digestion conditions.The biogas (methane and carbon dioxide) evolved is continuously monitored or measured at regular intervals in test and blank vessels to determine the cumulative biogas production. The percentage biodegradation is given by the ratio of the amount of biogas evolved from the test material to the maximum theoretical amount of biogas that can be produced from the test material. The maximum theoretical amount of biogas produced is calculated from the measured total organic carbon (TOC). This percentage biodegradation does not include the amount of carbon converted to new cell biomass which is not metabolized in turn to biogas during the course of the test.

Table 2.Test system information sheet									
Item	Inoculum			Reference materials/ TLC grade cellulose			Test item/ OX220401-014		
	1	2	3	1	2	3	1	2	3
Wet solids of inoculum, g	999.99	999.99	1000.00	1000.01	1000.04	1000.01	1000.00	1000.00	999.98
Total dry solids of inoculum, g	430.20	430.20	430.21	430.21	430.23	430.21	430.21	430.21	430.20
Volatile solids of inoculum，g	131.48	131.48	131.48	131.48	131.49	131.48	131.48	131.48	131.48
Wet solids of reference item or test item, g	/	/	/	15.74	15.74	15.73	15.18	15.18	15.16
Total dry solids of reference item or test item, g	/	/	/	15.01	15.01	15.00	15.10	15.10	15.08
Volatile solids of reference item or test item, g	/	/	/	15.01	15.01	15.00	15.02	15.02	15.00
The amount of carbon initially in the test material, g/vessel	/	/	/	6.7	6.7	6.7	12.6	12.6	12.6
Note：Pictures of test item before test were shown in Figure 2-3, respectively									

3. Results

Table 3. The volume of biogas evolved during the test

Days	The volume of biogas （mL）											
	Blank				Reference material				OX220401-014			
	1	2	3	average	1	2	3	average	1	2	3	average
2	224	230	218	224	2680	2610	2630	2640	245	275	248	256
5	207	233	220	220	3562	3840	3925	3776	232	243	235	237
8	218	197	200	205	3768	3812	3838	3806	248	237	260	248
15	429	432	410	424	1581	1629	1547	1586	491	560	524	525
22	409	410	391	403	799	770	751	773	550	408	479	479
29	295	285	270	283	410	401	422	411	441	441	424	435
36	200	215	230	215	428	431	415	425	431	413	420	421
45	420	376	378	391	483	446	472	467	470	470	450	463
60	545	495	588	543	747	742	727	739	630	593	612	612

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Table 4. Percentage biodegradation

Days	Percentage biodegradation (%)							
	Reference material				OX220401-014			
	1	2	3	average	1	2	3	average
2	13.2	13.2	13.1	13.1	0.0	0.0	0.0	0.0
5	36.5	38.7	38.9	38.0	0.1	0.1	0.1	0.1
8	61.8	64.5	64.8	63.7	0.3	0.2	0.2	0.2
15	70.8	73.7	73.9	72.8	0.4	0.6	0.5	0.5
22	74.3	76.9	76.9	76.0	0.9	0.7	0.8	0.8
29	75.7	78.1	78.2	77.3	1.4	1.1	1.2	1.3
36	77.4	79.9	79.9	79.1	2.2	1.8	1.7	1.9
45	78.2	80.4	80.7	79.8	2.5	2.2	1.9	2.2
60	79.5	81.7	81.8	81.0	2.8	2.4	2.2	2.4

Note： When the calculated result of percentage biodegradation is negative, denoted as "0".

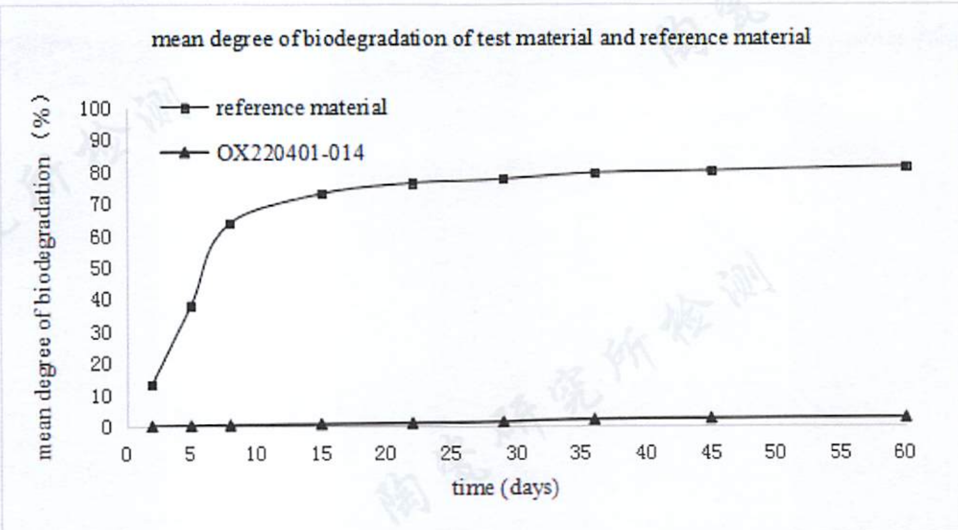

Fig 1. The mean values of percentage biodegradation curve

4. Validity of results

(1)Percentage biodegradation of three replicates of reference item was 70.8%、73.7% and 73.9% ,the mean value was 72.8%. The degree of biodegradation of the reference material is more than 70 % after 15 days。

(2)The differences between the individual values of three replicates of reference item were 1.8%、0.8% and 1.0% on the 60th day of the test.All were less than 20%.

The testing is therefore considered to be valid.

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

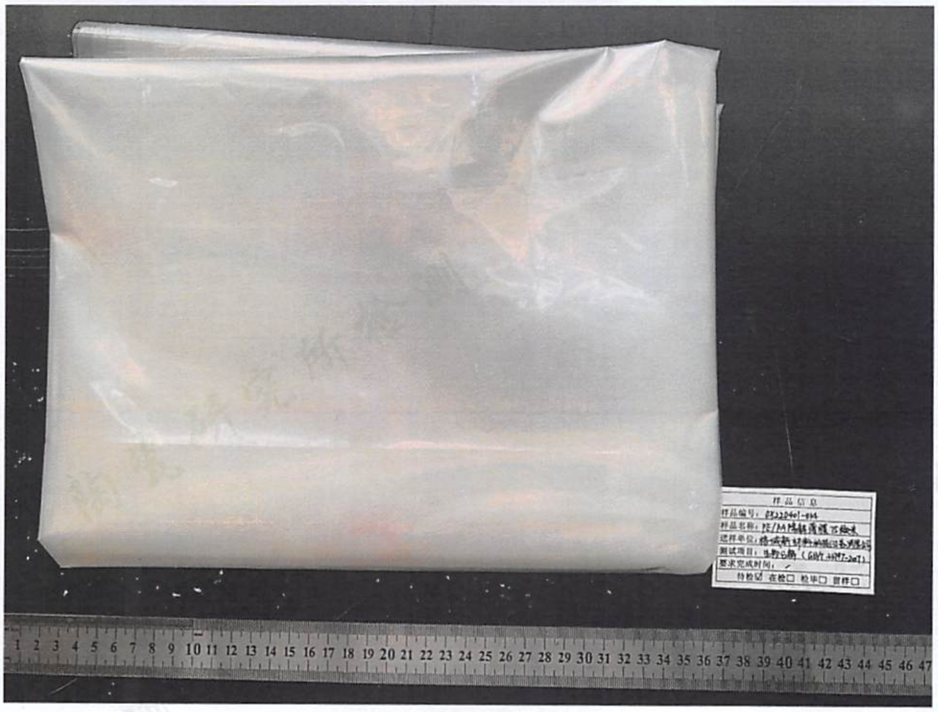

Fig 2.OX220401-014

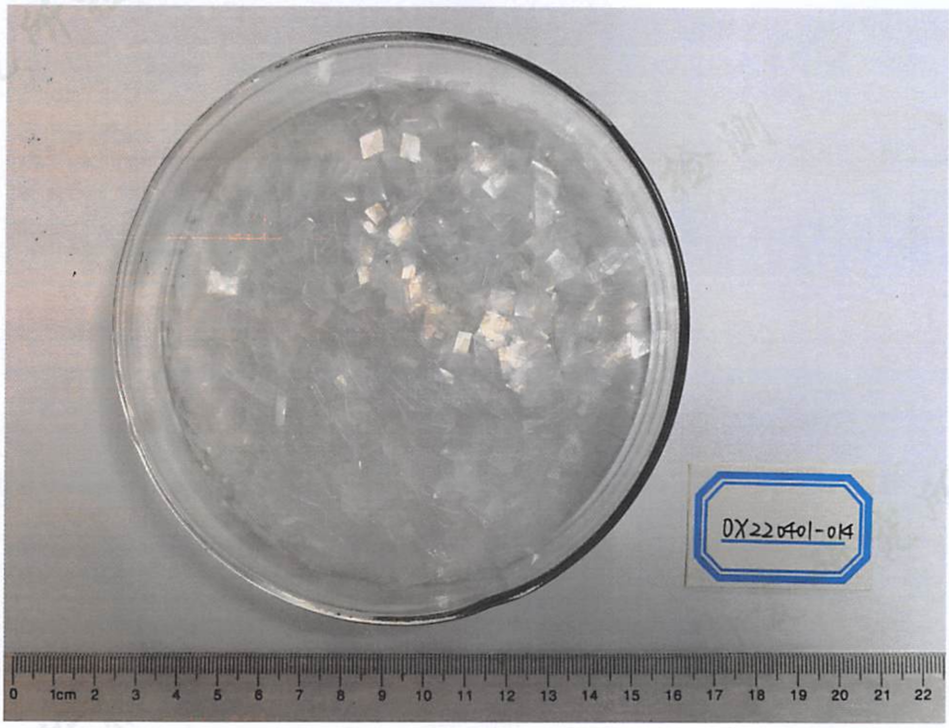

Fig 3.OX220401-014（Sample after cutting up）

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