TEST REPORT

No. **8621.SHJ1.2410.0269** Date: **12.04, 2024** Page: **1 / 6**

Applicant	:	SHANGHAI FINICE COMMODITY CO., LTD
Address	:	201A, BUILDING 3, NO.2388, CHENHANG ROAD, MINHANG DISTRICT, SHANGHAI, CHINA

Below information submitted by the applicant:

Product Name	:	polyvinyl alcohol
Model	:	/
Model may cover	:	/
Reference info.	:	/
Manufacturer info.	:	/
Supplier info.	:	/
Buyer info.	:	/
Country of Destination	:	/
Country of Origin	:	China

Sample Received	:	10.28, 2024
Test Period	:	10.28, 2024 - 12.03, 2024
Test Requirement	:	Refer to next pages
Test Method	:	Refer to next pages
Test Result	:	Refer to next pages
Test Conclusion	:	Refer to next pages

Signed for and on behalf of
Jordan Wang, General Manager
BU Chemical Compliance
TUV THURINGEN (SHANGHAI) CO., LTD.
Location: Shanghai

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RESULT SUMMARY

As requested by the client, test items as below:

	Test Items	Verdict
1.	Determining aerobic biodegradation of sample under controlled composting conditions in acc. to OCDE/OECD 301B	See results

TESTS CARRIED BY:

LAB ID: TTSLCM001; ADD.: ROOM 501, BUILDING 29-1, NO.259, ROAD SHIBEI GAOXIN, CHONGCHUAN, NANTONG, JIANGSU, CHINA

SAMPLE DESCRIPTION

Sample description : polyvinyl alcohol

TEST RESULTS

1. Biodegradation test

Test method: OECD 301B

1.1. Method introduction

Matters of general interest concerning the assessment of biodegradability are discussed in "General Procedures and Preparations" and it is advisable to read this before proceeding. For this method, the test substance should be non-volatile and its carbon content and, preferably, its purity or relative proportions of major components should be known.

1.2. Method principle

A measured volume of inoculated mineral medium, containing a known concentration of the test substance (10-20 mg DOC or TOC/l) as the nominal sole source of organic carbon is aerated by the passage of carbon dioxide-free air at a controlled rate in the dark or in diffuse light. Degradation is followed over 28 days by determining the carbon dioxide produced. The CO_2 is trapped in barium or sodium hydroxide and is measured by titration of the residual hydroxide or as inorganic carbon.

The amount of carbon dioxide produced from the test substance (corrected for that derived from the blank inoculum) is expressed as a percentage of $ThCO_2$. The degree of biodegradation may also be calculated from supplemental DOC analysis made at the beginning and end of incubation.

1.3. Test conditions:

- proportion and nature of industrial waste water in sewage: unknown, discharge from waste treatment facility within 1 mile.
- test duration and temperature: 28days or as indicated, 22℃±2℃
- bacterial inoculum ~1E5 cfu/ml

1.4. Test Results

Calculation of the theoretical amount of carbon dioxide ($ThCO_2$)

Reaction flasks	Inoculum			Reference item (Thin layer chromatograph grade cellulose)			Tested sample		
No.	1	2	3	4	5	6	7	8	9
Sample of inoculum, g	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Amount of reference items or test items	/	/	/	60.25	60.86	60.73	60.15	60.86	61.03
M_{TOT}, g	/	/	/	60.0	60.0	60.0	60.0	60.0	60.0
TOC, %	20.85			42.54			46.01		
C_{TOT}, g/g	0.2085			0.4254			0.4601		
$ThCO_2$, g/flask	/	/	/	95.2	95.2	95.2	102.0	102.0	102.0

Note: $ThCO_2 = M_{TOT}*C_{TOT}*44/12$

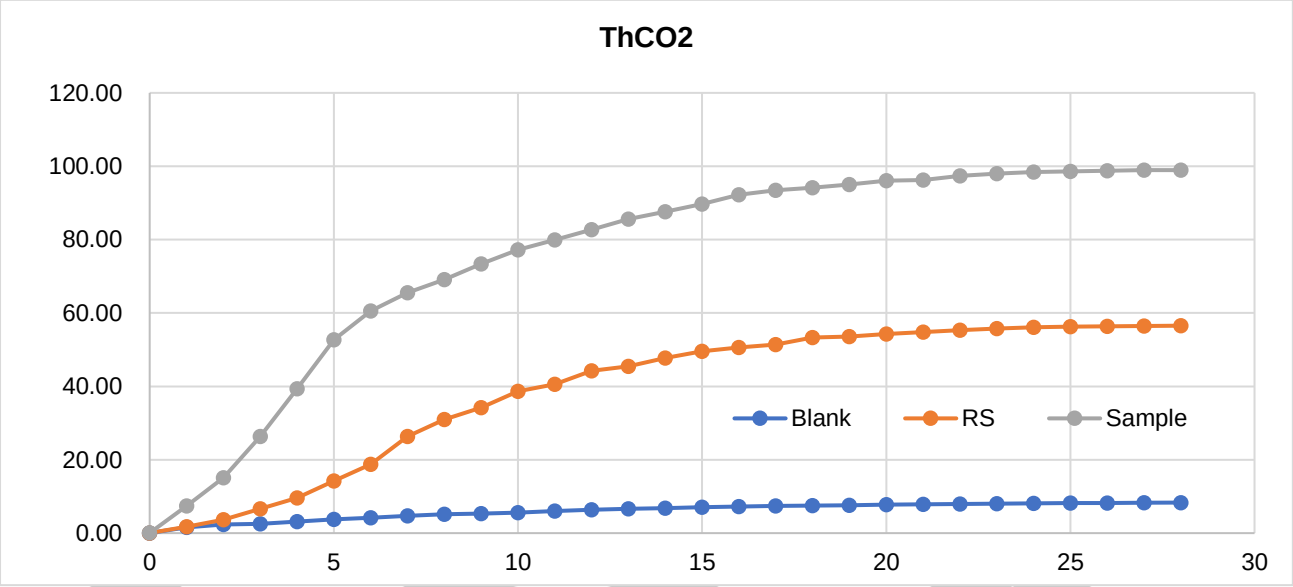
1.4.1. Cumulative CO_2 production and percentage degradation during the test periods

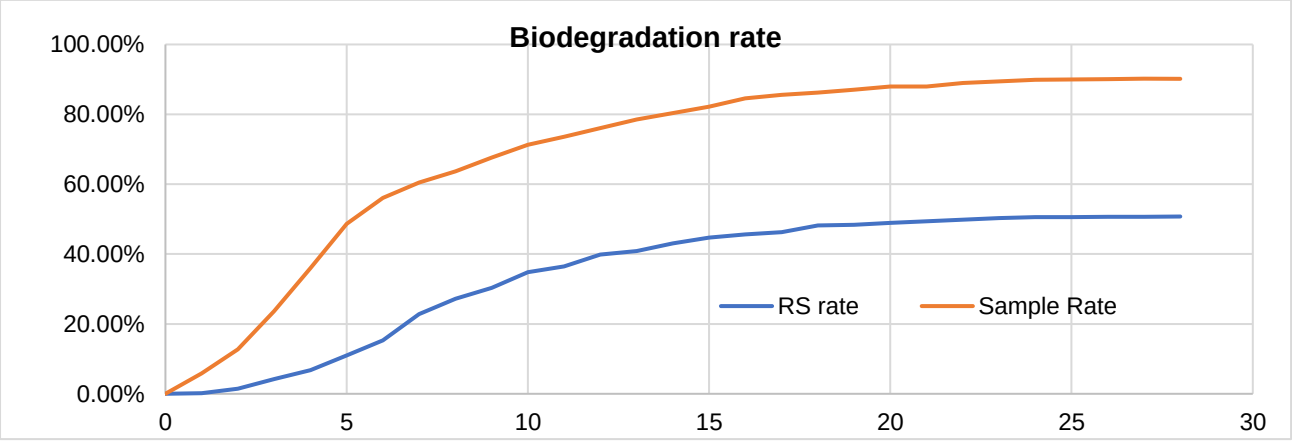
Date	Time	Cumulative CO_2 production (g/flask)					Percentage biodegradation (%)			
		Blank	Reference material		Sample		Reference material	Sample		
		Average, %	$(CO_2)C_P$	Average, %	$(CO_2)M$	Average, %	D_P, %	Average,%	DM, %	Average, %
2024-10-28	0	0.04	0.03	0.04	0.04	0.05	0.0%	0.0%	0.0%	0.0%
		0.02	0.02	0.04	0.04		0.0%		0.0%	
		0.02	0.05	0.04	0.05		0.0%		0.0%	
2024-10-29	1	1.56	1.71	1.73	7.37	7.43	0.2%	0.2%	5.8%	5.8%
		1.56	1.76	1.73	7.35		0.2%		5.8%	
		1.56	1.74	1.73	7.48		0.2%		5.9%	
2024-10-30	2	2.33	3.53	3.69	14.61	15.13	1.3%	1.4%	12.2%	12.7%
		2.33	4.42	3.69	15.26		2.2%		12.9%	
		2.33	3.85	3.69	15.64		1.6%		13.2%	
2024-10-31	3	2.57	6.71	6.61	26.25	26.35	4.4%	4.3%	23.6%	23.7%
		2.57	6.92	6.61	26.02		4.6%		23.3%	
		2.57	6.51	6.61	26.45		4.1%		23.8%	
2024-11-01	4	3.14	9.06	9.61	40.25	39.37	6.2%	6.8%	36.9%	36.0%
		3.14	10.35	9.61	40.12		7.6%		36.8%	
		3.14	10.15	9.61	38.48		7.4%		35.2%	
2024-11-02	5	3.77	13.69	14.25	52.83	52.71	10.4%	11.0%	48.8%	48.7%
		3.77	14.36	14.25	53.60		11.1%		49.6%	
		3.77	14.81	14.25	52.58		11.6%		48.6%	
2024-11-03	6	4.22	19.42	18.79	60.31	60.56	16.0%	15.3%	55.8%	56.1%
		4.22	19.90	18.79	60.07		16.5%		55.6%	
		4.22	18.16	18.79	60.80		14.7%		56.3%	
2024-11-04	7	4.71	26.89	26.37	66.47	65.52	23.4%	22.8%	61.5%	60.5%
		4.71	27.14	26.37	66.67		23.6%		61.7%	
		4.71	25.85	26.37	64.57		22.3%		59.6%	
2024-11-05	8	5.14	31.40	31.01	69.33	69.10	27.6%	27.2%	63.9%	63.6%
		5.14	31.36	31.01	70.44		27.6%		65.0%	
		5.14	30.61	31.01	68.86		26.8%		63.4%	
2024-11-06	9	5.35	34.42	34.18	73.56	73.34	30.6%	30.3%	67.9%	67.7%
		5.35	34.39	34.18	73.04		30.6%		67.4%	
		5.35	33.93	34.18	73.12		30.1%		67.4%	
2024-11-07	10	5.58	38.77	38.68	77.40	77.19	34.9%	34.8%	71.5%	71.3%
		5.58	38.99	38.68	77.48		35.2%		71.5%	
		5.58	38.59	38.68	76.98		34.7%		71.0%	
2024-11-08	11	5.99	40.31	40.61	80.31	79.97	36.1%	36.4%	74.0%	73.6%
		5.99	40.89	40.61	78.70		36.7%		72.4%	
		5.99	40.91	40.61	79.63		36.8%		73.3%	
2024-11-09	12	6.34	43.76	44.24	82.58	82.74	39.4%	39.9%	75.9%	76.0%
		6.34	44.58	44.24	82.05		40.3%		75.3%	
		6.34	44.72	44.24	82.89		40.4%		76.2%	
2024-11-10	13	6.62	45.82	45.47	85.36	85.58	41.3%	40.9%	78.3%	78.6%

Date	Time	Cumulative CO_2 production (g/flask)					Percentage biodegradation (%)			
		Blank	Reference material		Sample		Reference material	Sample		
		Average, %	$(CO_2)C_P$	Average, %	$(CO_2)M$	Average, %	D_P, %	Average,%	DM, %	Average, %
		6.62	45.40	45.47	85.84		40.8%		78.8%	
		6.62	45.11	45.47	85.79		40.5%		78.8%	
2024-11-11	14	6.84	47.49	47.74	88.13	87.64	42.8%	43.1%	80.9%	80.4%
		6.84	47.17	47.74	88.09		42.5%		80.8%	
		6.84	47.99	47.74	87.14		43.3%		79.9%	
2024-11-12	15	7.07	49.74	49.53	89.39	89.69	44.9%	44.7%	81.9%	82.2%
		7.07	49.80	49.53	90.03		45.0%		82.5%	
		7.07	49.31	49.53	89.99		44.5%		82.5%	
2024-11-13	16	7.29	50.42	50.61	92.41	92.26	45.4%	45.6%	84.7%	84.6%
		7.29	50.97	50.61	92.19		46.0%		84.5%	
		7.29	50.80	50.61	92.11		45.8%		84.4%	
2024-11-14	17	7.45	51.39	51.38	93.52	93.44	46.3%	46.2%	85.6%	85.6%
		7.45	51.71	51.38	93.70		46.6%		85.8%	
		7.45	51.37	51.38	93.36		46.2%		85.5%	
2024-11-15	18	7.51	53.28	53.32	94.28	94.15	48.2%	48.2%	86.3%	86.2%
		7.51	53.12	53.32	94.56		48.0%		86.6%	
		7.51	53.36	53.32	94.02		48.3%		86.1%	
2024-11-16	19	7.62	53.55	53.55	95.21	95.07	48.4%	48.3%	87.2%	87.0%
		7.62	53.83	53.55	95.00		48.6%		87.0%	
		7.62	53.54	53.55	94.92		48.3%		86.9%	
2024-11-17	20	7.73	54.27	54.24	96.17	96.10	49.0%	49.0%	88.0%	87.9%
		7.73	54.27	54.24	96.16		49.0%		88.0%	
		7.73	54.20	54.24	96.02		48.9%		87.9%	
2024-11-18	21	7.84	54.94	54.79	96.28	96.25	49.6%	49.4%	88.0%	88.0%
		7.84	54.73	54.79	96.97		49.4%		88.7%	
		7.84	54.63	54.79	96.22		49.3%		87.9%	
2024-11-19	22	7.97	55.35	55.33	97.45	97.35	49.9%	49.9%	89.0%	88.9%
		7.97	55.47	55.33	97.42		50.0%		89.0%	
		7.97	55.30	55.33	97.24		49.8%		88.8%	
2024-11-20	23	8.04	55.88	55.79	98.11	97.96	50.4%	50.3%	89.6%	89.5%
		8.04	55.80	55.79	97.61		50.3%		89.1%	
		8.04	55.69	55.79	97.81		50.2%		89.3%	
2024-11-21	24	8.12	56.09	56.14	98.25	98.43	50.5%	50.5%	89.7%	89.9%
		8.12	56.08	56.14	98.37		50.5%		89.8%	
		8.12	56.19	56.14	98.60		50.6%		90.0%	
2024-11-22	25	8.18	56.28	56.25	98.66	98.63	50.6%	50.6%	90.0%	90.0%
		8.18	56.26	56.25	98.64		50.6%		90.0%	
		8.18	56.22	56.25	98.59		50.6%		90.0%	
2024-11-23	26	8.22	56.31	56.35	98.74	98.79	50.6%	50.7%	90.1%	90.1%
		8.22	56.31	56.35	98.90		50.6%		90.2%	
		8.22	56.39	56.35	98.83		50.7%		90.2%	

Date	Time	Cumulative CO_2 production (g/flask)					Percentage biodegradation (%)			
		Blank	Reference material		Sample		Reference material	Sample		
		Average, %	$(CO_2)C_P$	Average, %	$(CO_2)M$	Average, %	D_P, %	Average,%	DM, %	Average, %
2024-11-24	27	8.27	56.45	56.43	98.90	98.94	50.7%	50.7%	90.2%	90.2%
		8.27	56.46	56.43	98.90		50.7%		90.2%	
		8.27	56.41	56.43	98.97		50.7%		90.2%	
2024-11-25	28	8.33	56.54	56.54	98.81	98.94	50.8%	50.8%	90.0%	90.2%
		8.33	56.56	56.54	98.90		50.8%		90.1%	
		8.33	56.54	56.54	99.07		50.8%		90.3%	

1.4.2. The curves of cumulative carbon dioxide production against time for the reference item and sample





1.4.3. Result summary:

Biodegradability rate:
7days, about 61%
14days, about 80%
28days, about 90%

1.5. Guidelines

The OECD 301B method is designed to provide the screening of chemicals for ready biodegradability in an aerobic aqueous medium. Samples are required to achieve a threshold of 60% degradation based on the maximum available carbon from a given sample formulation. Total carbon is determined analytically for each sample and used as the reference for the determination of the percentage of carbon dioxide (% $ThCO_2$) produced by microbiological degradation.

********** END OF REPORT **********