

**Test Report No.:** 244230906c 001

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**Client:** Shenzhen Steed Bio-Technique Co.,Ltd.

**Contact Information:** Room 1203I, Building 4, Huanggang Business Center,  
FuShan Community, Futian District, Shenzhen  
86-13802908581

**Identification/Model No(s):** Biodegradable Materials for all Plastics  
EPA Series

**Sample Receiving date:** 2020-04-10

**Sample obtaining method:** Sending by customer

**Condition at delivery:** Test item complete and undamaged.

**Testing Period:** 2020-04-17 to 2020-10-26

**Place of testing:** Chemical laboratory Shanghai and Kunshan

**Test specification:**

With reference to DIN EN 13432:2000,  
Testing according to customers specification for the following parameters:  
Heavy metals and other toxic substances  
Volatile solids content  
Total dry solids content  
Plastic identification by Fourier Transform Infrared Spectroscopy  
Aerobic Biodegradation Test

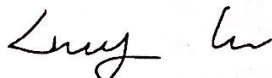
**Test result:**

Pass  
Pass  
Please refer to page 6  
Please refer to page 7  
Pass

**Other Information:**

Country of Origin: China

For and on behalf of  
TÜV Rheinland (Shanghai) Co., Ltd.



2020-12-22      Lucy Lu / Technical Supervisor  
Date                      Name/Position

Sample information is provided by customer. Test result is drawn according to the kind and extent of tests performed.  
This test report relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.  
"Decision Rule" document announced in our website (<https://www.tuv.com/landingpage/en/qm-gcn/>) describes the statement of conformity and its rule of enforcement for test results are applicable throughout this test report.

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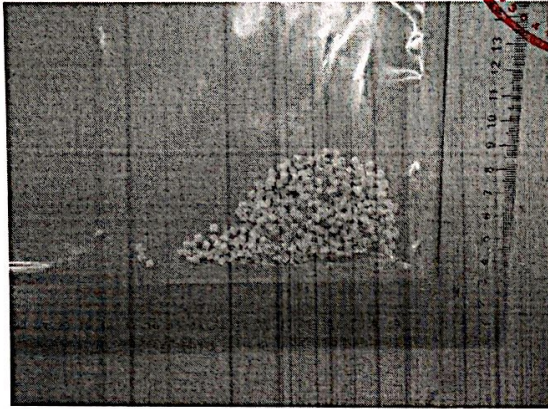


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Picture and detailed description of the test sample



M001

Material list:

Material no.	Material	Color	Location	Remark
M001	Plastic	White	Refer to photo	Sample for biodegradation Refer to 244230906a 001/M001





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**1. Heavy metals and other toxic substances**

**Test method:** For Fluorine (F) content, Refer to EN 14582.  
For other contents, In-house method, Microwave digestion, analyzed by ICP-MS.

**Test Result:**

Test Parameter	Unit	RL	Test No.
			Material No.
			T001
			M001
Test Parameter	Unit	RL	Test Result
Zn	mg/kg	5	32.4
Cu	mg/kg	5	n.d.
Ni	mg/kg	5	n.d.
Cd	mg/kg	0.25	n.d.
Pb	mg/kg	5	n.d.
Hg	mg/kg	0.25	n.d.
Cr	mg/kg	5	n.d.
Mo	mg/kg	0.25	n.d.
Se	mg/kg	0.25	n.d.
As	mg/kg	0.25	n.d.
F	mg/kg	50	n.d.
Co	mg/kg	3	n.d.

Abbreviation: n.d. = Not Detected (< RL)  
RL = Reporting Limit  
mg/kg denotes milligram per kilogram



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**Remark :**

1. The requirement is following DIN EN13432:2000 Annex A
2. The concentrations of regulated metals and other toxic substances in the plastic product or material shall be less than 50 % of those prescribed for sludges, fertilizers and composts in the country where the final product will be placed on the market or disposed of. Refer to below Table 1 for examples.

Table 1 — Examples of maximum concentrations of regulated metals and other toxic substances  
Values given in mg/kg of dry material

Element	ASTM D6400/ASTM D6868		EN13432 c / AS4736/AS5810 d	China e	Japan f
	US a	Canada b			
Zn	1400	463	150	—	180
Cu	750	189	50	—	60
Ni	210	45	25	—	30
Cd	17	5	0.5	1.5	0.5
Pb	150	125	50	50	10
Hg	8.5	1	0.5	2.5	0.2
Cr	—	265	50	150	50
Mo	—	5	1	—	—
Se	50	4	0.75	—	—
As	20.5	19	5	15	5
F	—	—	100	—	—
Co	—	38	—	—	—

a The maximum metal concentrations given here for the US are 50 % of those prescribed by 40 CFR 503.13, Table 3 (as per ASTM D6400 requirements).

b The maximum metal concentrations for Canada are those prescribed in 6.1 of BNQ 9011-911-I/2007.

c The maximum metal concentrations for the EC are 50 % of those prescribed in ecological criteria for the award of the Community eco-label to soil improvers (EC OJ L 219, 7.8.1998, p. 39).

d The maximum metal concentrations given here for Australia refers to EN 13432, Table A.1.

e The maximum metal concentrations for China are 50 % of those prescribed by CJ/T 3059-1996 for Quality of Composts.

f The maximum metal concentrations for Japan are 10 % of those prescribed in the Fertilizer Control Law (Ministry of Agriculture, Forestry and Fisheries) and Guidelines for Quality of Composts (Central Union of Agricultural Co-operatives).



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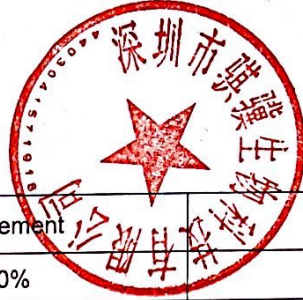
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**2. Volatile solids content**

**Test Method:** Refer to DIN EN 13432:2000.

**Test result**

Test No.	Material No.	requirement	Result
T001	M001	≥50%	98.0%



Abbreviation: % = Percentage

**Remark:**

1. The requirement is following DIN EN 13432: 2000 annex A.



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**3.Total dry solids content**

**Test Method:** Refer to DIN EN 13432:2000 and ISO 14855-1:2012.



**Test result**

Test No.	Material No.	Result
T001	M001	98.1%

Abbreviation: % = Percentage



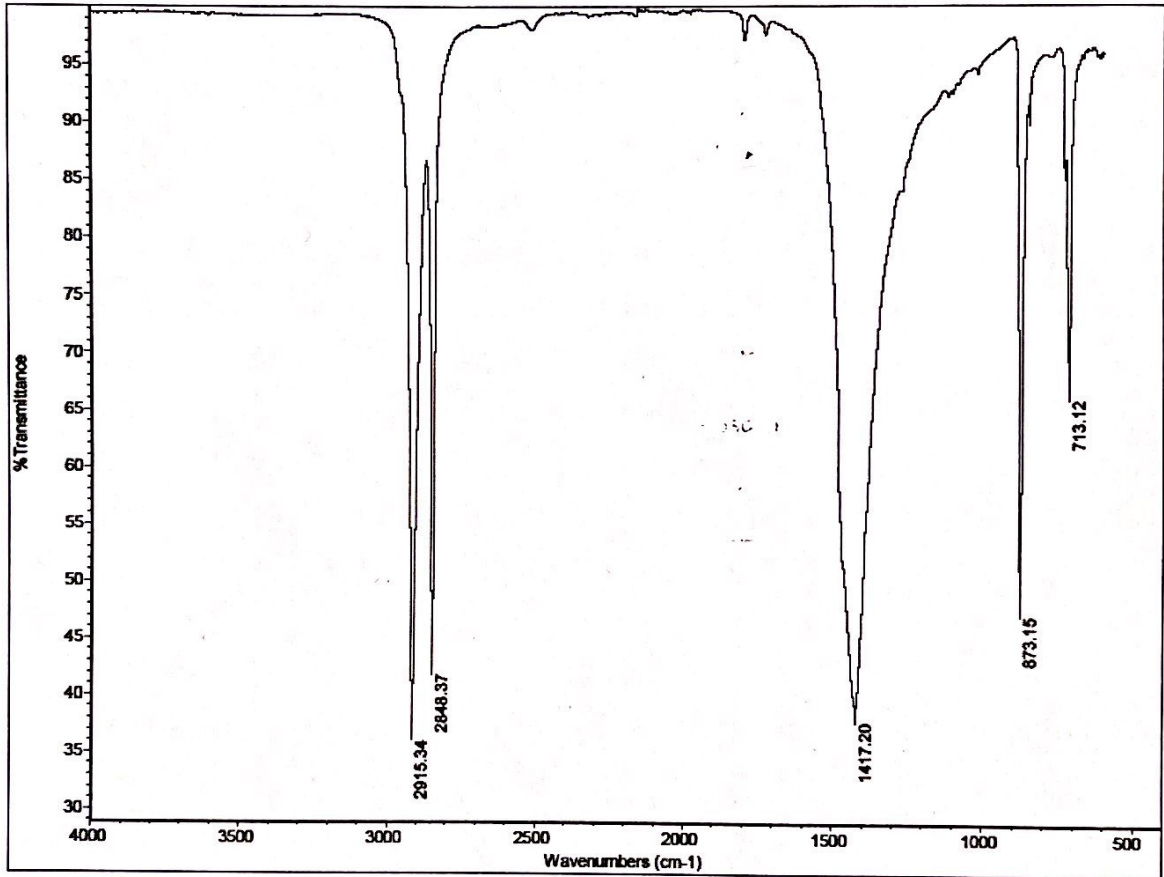
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4. Plastic identification by Fourier Transform Infrared Spectroscopy

Test method: Determination by Fourier Transform Infrared Spectroscopy

Picture of IR Spectrometry for M001



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**5. Biodegradation**

**5.1 General test information**

Test Method : Refer to ISO 14855-1:2012/ASTM D5338-15

Reference material : Cellulose

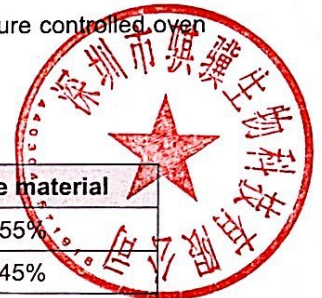
Test vessels : The vessel used for biodegradation test is a high pressure conical flask, volume: 3000 ml. It was provided by Pyrex Co. Ltd.

CO<sub>2</sub>-determination : Determination of the amount of carbon dioxide evolved by weighing the carbon dioxide absorbing system. The amount of carbon dioxide is calculated via the difference in the weight of the carbon dioxide absorbing trap in the beginning and in the end of the test.

Thermostat controlled oven : The biodegradation test is proceeded in a temperature controlled oven for maintaining the temperature needed.

**5.2 Summary of test results**

	Test material	Reference material
45 days biodegradation rate	>33.41%	>76.55%
Overall biodegradation rate	90.18%	100.45%
Test duration [days]	146	146
Observation	No abnormal findings	No abnormal findings



**Validity Criteria :**

- Degree of biodegradation of reference material after 45 days > 70%?  Yes  No
- Difference between percentage biodegradation of reference material in the different vessels at the end of test <20%?  Yes  No
- Average CO<sub>2</sub> production in the blank vessels after 10 days in the range 50 mg to 150 mg CO<sub>2</sub>/g volatile solids?  Yes  No

As the three criteria above have been fulfilled, the test is considered to be valid.  
For detailed information, please see the following pages

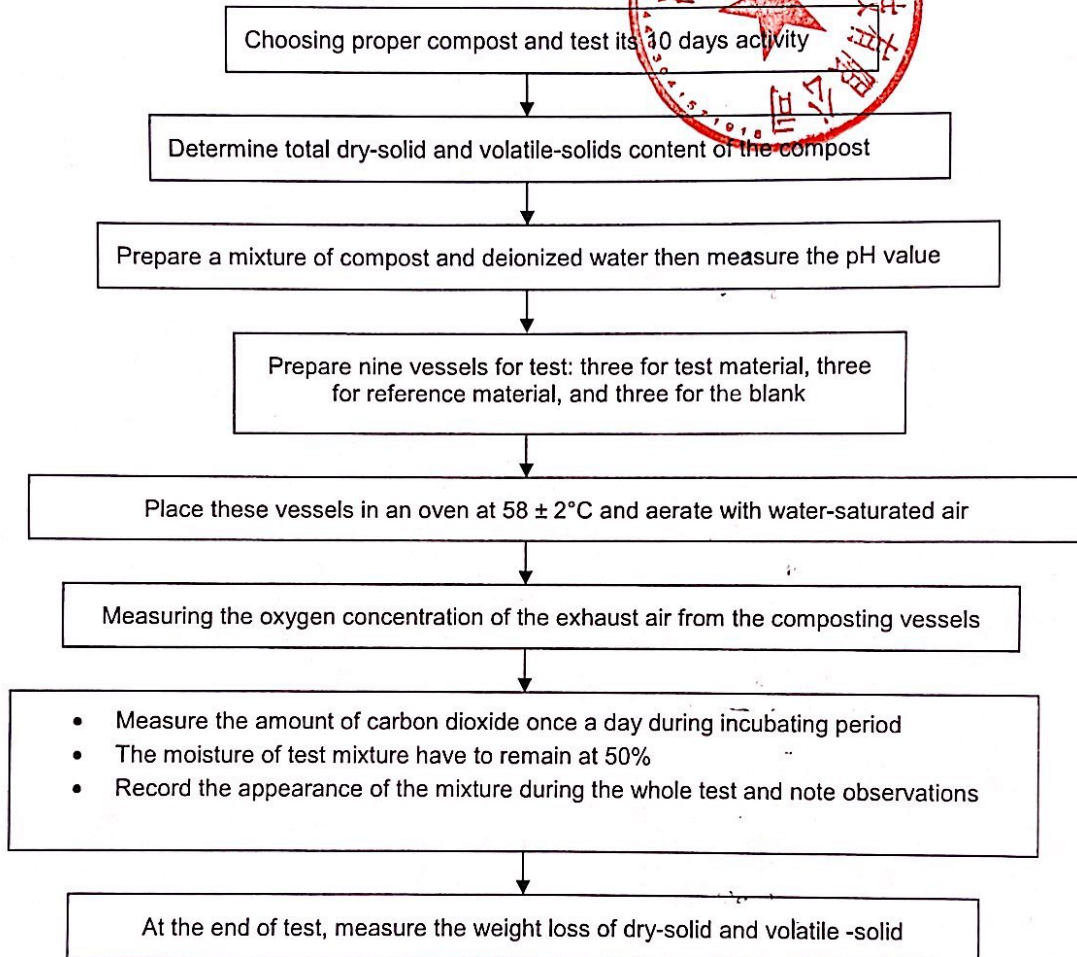




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5.3 Flow chart of experiment

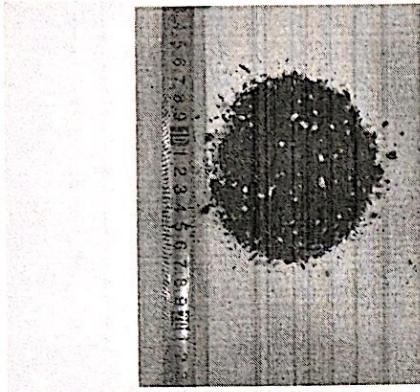


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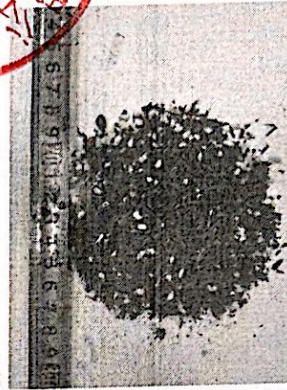
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5.4 Results

5.4.1 Appearance of compost and sample

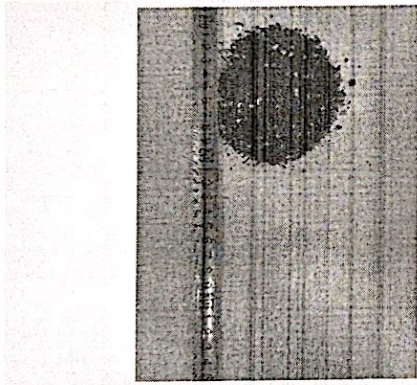


Before test

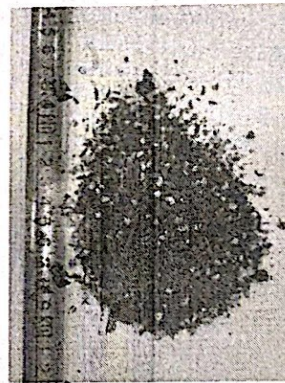


After test

Compost without any material before and after test

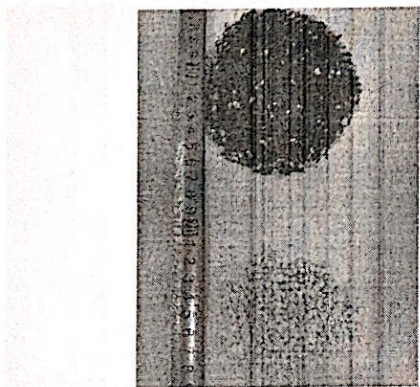


Before test



After test

Compost with reference material before and after test



Before test



After test

Compost with test material before and after test



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5.4.2 Properties of compost

Total dry solids (%)	Moisture content (%)	Volatile solids (%)	Ash (%)	Compost Activity Test (mg CO <sub>2</sub> /g volatile solid)	Carbon/ Nitrogen ratio
53.0	47.0	52.0	48.0	140.8	11.7

5.4.3 Activity of the compost

The amount of CO<sub>2</sub> for the first 10 days

Days	Amount of carbon dioxide (mg)
1~2	6530
3~5	6430
6~7	4800
8~10	5530
Total	23290

Compost Activity =140.8 (mg CO<sub>2</sub> /g volatile solid)

Calculation:

Amount of CO<sub>2</sub> absorbed during the first 10 days [g] / (600g \* total dry solids \* volatile solids)  
600g is the amount of compost used for each vessel.

5.4.4 Total Amount of Organic Carbon for Test and Reference Samples

The content of organic carbon in sample and reference material (cellulose) is determined. Results are used for calculation of amount of test material necessary to have an amount of 20g organic carbon in each vessel.

For reference material:  $m = \text{amount of organic carbon each vessel} / \text{TOC} = 20.0\text{g} / 0.421\text{g/g} = 47.5\text{g}$   
20g of organic carbon lead to a theoretical amount of 73.3g CO<sub>2</sub> evolved by microorganisms when the rate of biodegradation reaches 100%.

Total amount of organic carbon

Parameter	Unit	Reference material	Test material
Total organic carbon (TOC)	(%)	42.1	41.6
Amount of organic carbon (TOC) in test vessel	(g)	20	20
Theoretical amount of evolved carbon dioxide	(ThCO <sub>2</sub> ), (g)	73.3	73.3
Size	(cm × cm)	—	—
Thickness	(mm)	—	—
Shape	—	powder	shredded pieces
Total dry solids	(%)	98.0	98.1

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Moisture content	(%)	2.0	1.9
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5.4.5 The amount of sample and compost in the test vessel

	Compost		Sample	
	Weight (g)	Total dry solids (g)	Weight (g)	Total dry solids (g)
Blank	600	318	None	None
Reference	600	318	47.5	46.6
Sample	600	318	48.1	47.2

5.5 pH Value

The pH value of the compost is checked at the beginning and at the end of the test. It is determined by diluting compost with distilled water by 1:5 and measuring the value with an electrical pH-meter.

The pH values before and after test

	Blank 1	Blank 2	Blank 3
Before Test	7.2	7.3	7.4
After Test	7.1	7.2	7.3

The pH values before and after test

	Reference material 1	Reference material 2	Reference material 3
Before Test	7.3	7.2	7.3
After Test	7.1	7.0	7.2

The pH values before and after test

	Test material 1	Test material 2	Test material 3
Before Test	7.1	7.2	7.3
After Test	7.0	7.1	7.2

The pH values of the vessels do not show any obvious differences to the other vessels. Big differences in the pH value could ask for rejecting single values.



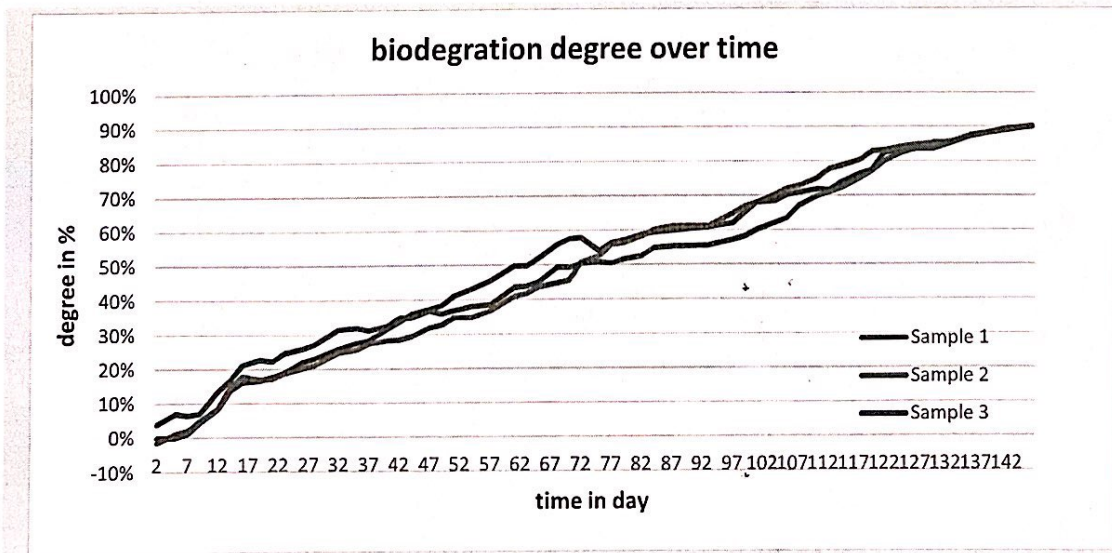
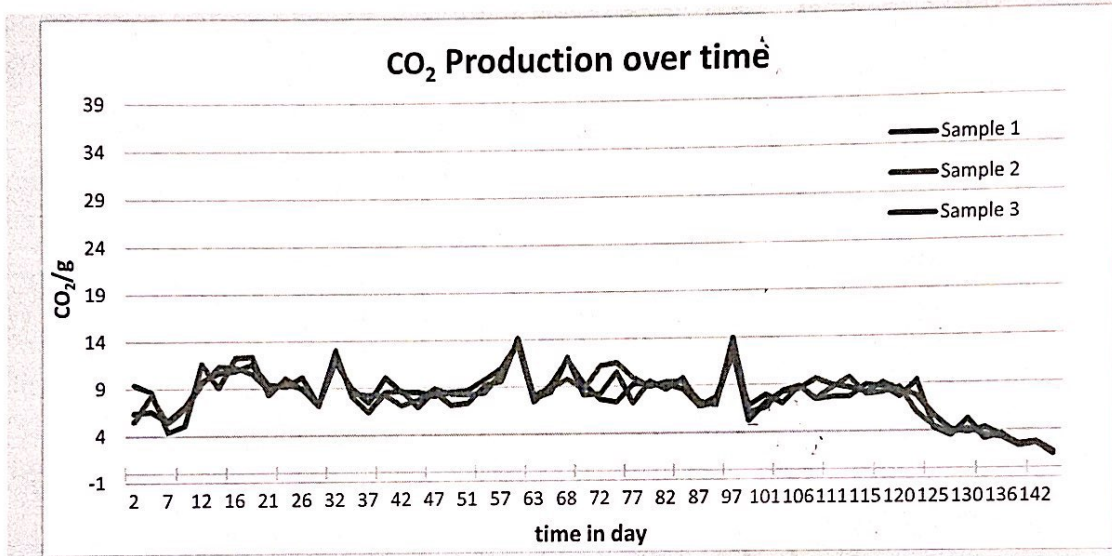
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5.6 Controlled Aerobic Biodegradation Test (Mass of Organic Matter)

5.6.1 Test Material

Amount of total organic carbon (TOC) of the test material placed in each vessel	20.0g
This TOC leads to a theoretical amount of evolved carbon dioxide (TheCO <sub>2</sub> ), caused by the degradation of the test material	73.3g



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Controlled aerobic biodegradation test data of test material

Day	CO <sub>2</sub> (g/vessel)								D (%)			
	B1	B2	B3	B <sub>mean</sub>	t1	t2	t3	t <sub>mean</sub>	t1	t2	t3	t <sub>mean</sub>
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
2	8.60	5.60	5.40	6.53	6.40	5.50	9.40	7.10	-0.18%	-1.41%	3.91%	0.77%
5	6.20	7.50	5.60	6.43	6.60	8.30	8.70	7.87	0.23%	2.55%	3.09%	1.95%
7	3.80	5.80	4.80	4.80	5.60	5.40	4.40	5.13	1.09%	0.82%	-0.55%	0.45%
9	4.90	5.00	4.30	4.73	7.10	6.90	5.10	6.37	3.23%	2.95%	0.50%	2.23%
12	7.10	7.40	6.20	6.90	9.80	9.50	11.70	10.33	3.95%	3.55%	6.55%	4.68%
14	8.70	6.10	5.40	6.73	10.70	11.40	9.10	10.40	5.41%	6.36%	3.23%	5.00%
16	10.00	8.30	8.90	9.07	10.90	11.30	12.30	11.50	2.50%	3.05%	4.41%	3.32%
19	11.20	12.10	10.40	11.23	11.60	10.60	12.40	11.53	0.50%	-0.86%	1.59%	0.41%
21	9.90	8.60	7.50	8.67	9.40	8.80	8.30	8.83	1.00%	0.18%	-0.50%	0.23%
23	8.20	7.80	8.90	8.30	9.20	9.50	10.10	9.60	1.23%	1.64%	2.45%	1.77%
26	7.90	8.90	7.10	7.97	10.20	9.00	8.90	9.37	3.05%	1.41%	1.27%	1.91%
28	6.60	6.40	6.20	6.40	7.20	7.10	7.30	7.20	1.09%	0.95%	1.23%	1.09%
32	9.10	11.00	9.30	9.80	11.90	12.50	13.00	12.47	2.86%	3.68%	4.36%	3.64%
35	7.30	7.30	8.80	7.80	9.00	8.40	8.10	8.50	1.64%	0.82%	0.41%	0.95%
37	6.40	6.80	7.50	6.90	7.40	8.20	6.40	7.33	0.68%	1.77%	-0.68%	0.59%
40	8.40	7.20	7.20	7.60	10.10	8.20	8.50	8.93	3.41%	0.82%	1.23%	1.82%
42	6.50	8.30	6.10	6.97	8.50	7.10	8.70	8.10	2.09%	0.18%	2.36%	1.55%
44	7.10	7.10	6.60	6.93	8.50	7.70	6.90	7.70	2.14%	1.05%	-0.05%	1.05%
<b>After 44 days</b>	<b>137.90</b>	<b>137.20</b>	<b>126.20</b>	<b>133.77</b>	<b>160.10</b>	<b>155.40</b>	<b>159.30</b>	<b>158.27</b>	<b>35.91%</b>	<b>29.50%</b>	<b>34.82%</b>	<b>33.41%</b>
47	6.30	7.60	7.40	7.10	8.10	8.90	8.60	8.53	1.36%	2.45%	2.05%	1.95%
49	6.70	8.50	7.90	7.70	8.50	8.30	7.10	7.97	1.09%	0.82%	-0.82%	0.36%
51	6.20	7.50	6.40	6.70	8.70	8.20	7.30	8.07	2.73%	2.05%	0.82%	1.86%
54	8.20	8.20	8.50	8.30	9.80	8.40	9.20	9.13	2.05%	0.14%	1.23%	1.14%
57	9.90	8.80	9.10	9.27	11.00	10.60	9.60	10.40	2.36%	1.82%	0.45%	1.55%
61	11.40	10.50	9.70	10.53	13.70	13.60	14.20	13.83	4.32%	4.18%	5.00%	4.50%
63	7.30	7.80	7.30	7.47	7.40	8.10	7.70	7.73	-0.09%	0.86%	0.32%	0.36%
65	6.30	8.60	7.70	7.53	9.20	8.90	8.40	8.83	2.27%	1.86%	1.18%	1.77%
68	8.50	9.90	8.70	9.03	11.90	9.80	12.10	11.27	3.91%	1.05%	4.18%	3.05%
70	8.10	8.10	8.00	8.07	9.30	8.70	8.10	8.70	1.68%	0.86%	0.05%	0.86%
72	7.40	7.00	7.70	7.37	7.60	11.20	8.20	9.00	0.32%	5.23%	1.14%	2.23%
75	10.10	8.70	11.60	10.13	7.30	11.50	10.50	9.77	-3.86%	1.86%	0.50%	-0.50%

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77	6.80	8.20	7.50	7.50	9.20	9.90	7.20	8.77	2.32%	3.27%	-0.41%	1.73%
79	8.40	9.70	7.70	8.60	9.20	8.90	9.50	9.20	0.82%	0.41%	1.23%	0.82%
82	8.30	8.20	7.40	7.97	9.10	9.40	8.60	9.03	1.55%	1.95%	0.86%	1.45%
84	7.70	8.10	8.50	8.10	8.60	9.40	9.80	9.27	0.68%	1.77%	2.32%	1.59%
87	6.60	7.40	5.50	6.50	6.80	7.30	6.80	6.97	0.41%	1.09%	0.41%	0.64%
93	6.10	7.10	7.50	6.90	7.70	6.90	7.10	7.23	1.09%	0.00%	0.27%	0.45%
97	10.10	14.60	9.60	11.43	12.20	14.00	12.60	12.93	1.05%	3.50%	1.59%	2.05%
99	3.70	5.20	4.60	4.50	6.80	6.10	5.20	6.03	3.14%	2.18%	0.95%	2.09%
101	5.40	6.30	5.40	5.70	7.90	6.60	7.10	7.20	3.00%	1.23%	1.91%	2.05%
104	6.20	7.60	6.30	6.70	7.00	8.30	8.20	7.83	0.41%	2.18%	2.05%	1.55%
106	8.40	7.40	6.80	7.53	8.80	8.80	8.50	8.70	1.73%	1.73%	1.32%	1.59%
108	6.90	6.60	7.10	6.87	7.40	7.50	9.60	8.17	0.73%	0.86%	3.73%	1.77%
111	7.70	6.90	6.20	6.93	7.60	8.60	8.90	8.37	0.91%	2.27%	2.68%	1.95%
113	8.50	7.20	7.50	7.73	7.60	9.70	8.60	8.63	-0.18%	2.68%	1.18%	1.23%
115	7.60	7.50	6.70	7.27	8.90	7.90	8.10	8.30	2.23%	0.86%	1.14%	1.41%
118	6.20	7.40	7.10	6.90	8.70	8.10	9.10	8.63	2.45%	1.64%	3.00%	2.36%
120	7.50	5.80	7.00	6.77	7.60	8.60	8.30	8.17	1.14%	2.50%	2.09%	1.91%
122	5.90	4.90	6.10	5.63	9.30	5.90	7.70	7.63	5.00%	0.36%	2.82%	2.73%
125	3.40	3.50	4.50	3.80	4.30	4.50	5.60	4.80	0.68%	0.95%	2.45%	1.36%
127	3.00	4.40	2.50	3.30	3.50	3.70	4.10	3.77	0.27%	0.55%	1.09%	0.64%
130	6.20	3.00	2.30	3.83	5.20	4.20	3.80	4.40	1.86%	0.50%	-0.05%	0.77%
133	2.20	3.60	3.40	3.07	3.10	3.50	4.30	3.63	0.05%	0.59%	1.68%	0.77%
136	1.90	2.20	1.70	1.93	3.60	3.20	3.40	3.40	2.27%	1.73%	2.00%	2.00%
139	2.00	1.90	1.40	1.77	2.30	2.30	2.50	2.37	0.73%	0.73%	1.00%	0.82%
142	1.80	1.50	2.50	1.93	2.70	2.60	2.70	2.67	1.05%	0.91%	1.05%	1.00%
146	1.00	1.20	0.60	0.93	1.40	1.70	1.70	1.60	0.64%	1.05%	1.05%	0.91%
<b>Total</b>	<b>383.80</b>	<b>395.80</b>	<b>369.60</b>	<b>383.07</b>	<b>449.10</b>	<b>449.20</b>	<b>449.30</b>	<b>449.20</b>	<b>90.05%</b>	<b>90.18%</b>	<b>90.32%</b>	<b>90.18%</b>

The rate of biodegradation reached 90% for average degree.

$(CO_2)_B$  = Measured cumulative CO<sub>2</sub> production by blank

$(CO_2)_t$  = Measured cumulative CO<sub>2</sub> production by test material

$(CO_2)_{Bmean}$  =  $[(CO_2)_{B1} + (CO_2)_{B2} + (CO_2)_{B3}] / 3$

$D$  =  $[(CO_2)_t - (CO_2)_{Bmean}] / ThCO_2$

$D_{mean}$  =  $(D_{t1} + D_{t2} + D_{t3}) / 3$



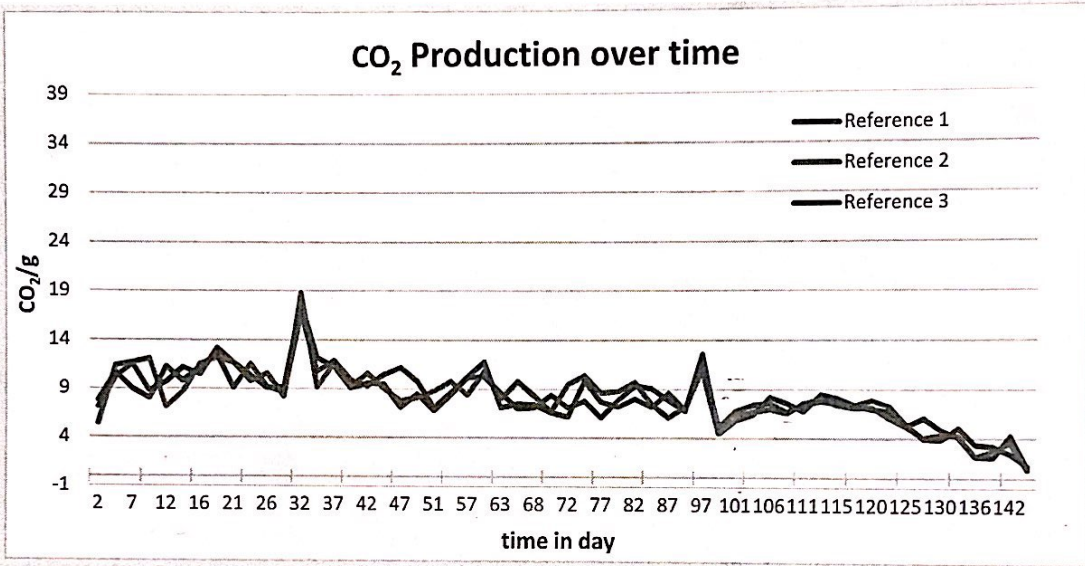
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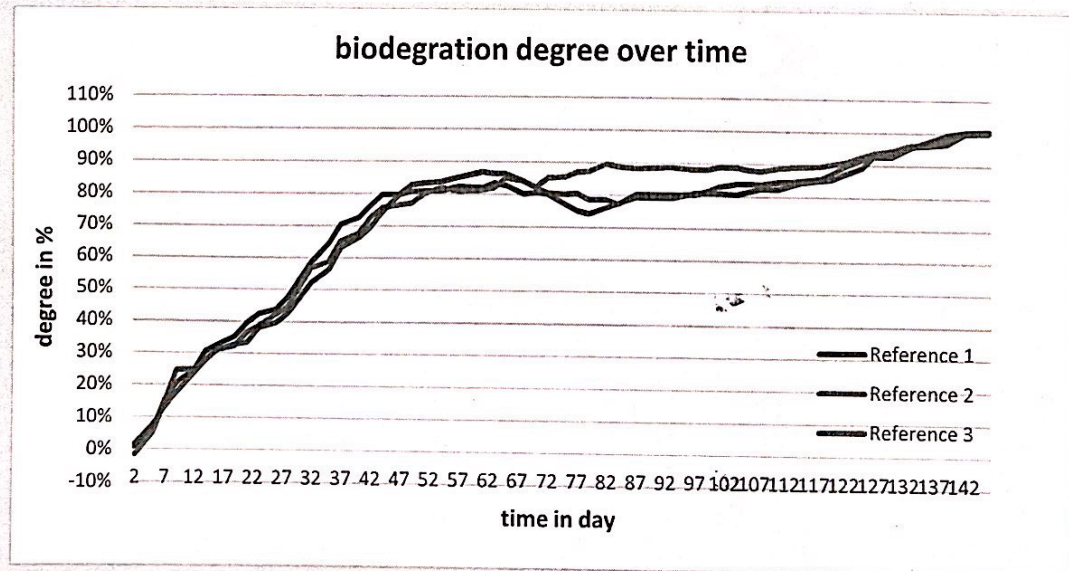
5.6.2 Reference Material



Amount of total organic carbon (TOC) of the reference material placed in each vessel	20.0g
This TOC leads to a theoretical amount of evolved carbon dioxide (ThCO <sub>2</sub> ), caused by the degradation of the reference material	73.3g



CO<sub>2</sub> Evolution Curve of Reference Material  
Production of CO<sub>2</sub> over time



Biodegradation Curve of Reference Material  
Degree of degradation over time





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Controlled aerobic biodegradation test data of reference material

Day	CO <sub>2</sub> (g/vessel)								D (%)			
	B1	B2	B3	B <sub>mean</sub>	R1	R2	R3	R <sub>mean</sub>	R1	R2	R3	R <sub>mean</sub>
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
2	8.60	5.60	5.40	6.53	7.10	5.40	7.80	6.77	0.77%	-1.55%	1.73%	0.32%
5	6.20	7.50	5.60	6.43	10.20	11.40	10.70	10.77	5.14%	6.77%	5.82%	5.91%
7	3.80	5.80	4.80	4.80	11.60	11.70	9.00	10.77	9.27%	9.41%	5.73%	8.14%
9	4.90	5.00	4.30	4.73	8.80	12.10	8.00	9.63	5.55%	10.05%	4.45%	6.68%
12	7.10	7.40	6.20	6.90	9.70	7.10	11.30	9.37	3.82%	0.27%	6.00%	3.36%
14	8.70	6.10	5.40	6.73	11.20	8.70	9.80	9.90	6.09%	2.68%	4.18%	4.32%
16	10.00	8.30	8.90	9.07	10.50	11.60	11.30	11.13	1.95%	3.45%	3.05%	2.82%
19	11.20	12.10	10.40	11.23	13.20	12.20	12.60	12.67	2.68%	1.32%	1.86%	1.95%
21	9.90	8.60	7.50	8.67	11.70	11.70	9.10	10.83	4.14%	4.14%	0.59%	2.95%
23	8.20	7.80	8.90	8.30	10.40	9.80	11.60	10.60	2.86%	2.05%	4.50%	3.14%
26	7.90	8.90	7.10	7.97	9.10	10.60	9.20	9.63	1.55%	3.59%	1.68%	2.27%
28	6.60	6.40	6.20	6.40	9.20	8.20	8.60	8.67	3.82%	2.45%	3.00%	3.09%
32	9.10	11.00	9.30	9.80	17.80	18.80	16.90	17.83	10.91%	12.27%	9.68%	10.95%
35	7.30	7.30	8.80	7.80	12.20	9.20	10.80	10.73	6.00%	1.91%	4.09%	4.00%
37	6.40	6.80	7.50	6.90	11.30	11.70	11.90	11.63	6.00%	6.55%	6.82%	6.45%
40	8.40	7.20	7.20	7.60	9.10	9.30	9.90	9.43	2.05%	2.32%	3.14%	2.50%
42	6.50	8.30	6.10	6.97	9.60	10.60	9.30	9.83	3.59%	4.95%	3.18%	3.91%
44	7.10	7.10	6.60	6.93	9.50	9.10	10.50	9.70	3.50%	2.95%	4.86%	3.77%
<b>After 44 days</b>	<b>137.90</b>	<b>137.20</b>	<b>126.20</b>	<b>133.77</b>	<b>192.20</b>	<b>189.20</b>	<b>188.30</b>	<b>189.90</b>	<b>79.68%</b>	<b>75.59%</b>	<b>74.36%</b>	<b>76.55%</b>
47	6.30	7.60	7.40	7.10	7.10	7.80	11.20	8.70	0.00%	0.95%	5.59%	2.18%
49	6.70	8.50	7.90	7.70	8.50	8.10	9.80	8.80	1.09%	0.55%	2.86%	1.50%
51	6.20	7.50	6.40	6.70	6.80	8.80	7.10	7.57	0.14%	2.86%	0.55%	1.18%
54	8.20	8.20	8.50	8.30	8.40	9.80	8.60	8.93	0.14%	2.05%	0.41%	0.86%
57	9.90	8.80	9.10	9.27	10.20	8.40	10.30	9.63	1.27%	-1.18%	1.41%	0.50%
61	11.40	10.50	9.70	10.53	10.30	10.90	11.80	11.00	-0.32%	0.50%	1.73%	0.64%
63	7.30	7.80	7.30	7.47	8.60	8.00	7.10	7.90	1.55%	0.73%	-0.50%	0.59%
65	6.30	8.60	7.70	7.53	7.00	9.80	7.50	8.10	-0.73%	3.09%	-0.05%	0.77%
68	8.50	9.90	8.70	9.03	7.10	8.30	7.40	7.60	-2.64%	-1.00%	-2.23%	-1.95%
70	8.10	8.10	8.00	8.07	8.40	6.70	6.60	7.23	0.45%	-1.86%	-2.00%	-1.14%
72	7.40	7.00	7.70	7.37	7.10	9.50	6.20	7.60	-0.36%	2.91%	-1.59%	0.32%
75	10.10	8.70	11.60	10.13	7.80	10.40	9.90	9.37	-3.18%	0.36%	-0.32%	-1.05%
77	6.80	8.20	7.50	7.50	6.10	8.60	7.70	7.47	-1.91%	1.50%	0.27%	-0.05%

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Day	CO <sub>2</sub> (g/vessel)								D (%)			
	B1	B2	B3	B <sub>mean</sub>	R1	R2	R3	R <sub>mean</sub>	R1	R2	R3	R <sub>mean</sub>
79	8.40	9.70	7.70	8.60	7.90	8.80	7.20	7.97	-0.95%	0.27%	-1.91%	-0.86%
82	8.30	8.20	7.40	7.97	9.40	9.70	8.00	9.03	1.95%	2.36%	0.05%	1.45%
84	7.70	8.10	8.50	8.10	9.10	7.50	7.20	7.93	1.36%	-0.82%	-1.23%	-0.23%
87	6.60	7.40	5.50	6.50	7.90	6.10	8.60	7.53	1.91%	-0.55%	2.86%	1.41%
93	6.10	7.10	7.50	6.90	6.80	7.20	6.90	6.97	-0.14%	0.41%	0.00%	0.09%
97	10.10	14.60	9.60	11.43	12.60	11.00	11.60	11.73	1.59%	-0.59%	0.23%	0.41%
99	3.70	5.20	4.60	4.50	4.50	4.50	5.20	4.73	0.00%	0.00%	0.95%	0.32%
101	5.40	6.30	5.40	5.70	5.80	6.30	6.80	6.30	0.14%	0.82%	1.50%	0.82%
104	6.20	7.60	6.30	6.70	6.40	6.70	7.40	6.83	-0.41%	0.00%	0.95%	0.18%
106	8.40	7.40	6.80	7.53	8.20	7.00	7.60	7.60	0.91%	-0.73%	0.09%	0.09%
108	6.90	6.60	7.10	6.87	7.60	6.60	6.70	6.97	1.00%	-0.36%	-0.23%	0.14%
111	7.70	6.90	6.20	6.93	6.80	7.60	7.50	7.30	-0.18%	0.91%	0.77%	0.50%
113	8.50	7.20	7.50	7.73	8.50	8.00	7.80	8.10	1.05%	0.36%	0.09%	0.50%
115	7.60	7.50	6.70	7.27	8.10	7.40	7.60	7.70	1.14%	0.18%	0.45%	0.59%
118	6.20	7.40	7.10	6.90	7.40	7.10	7.40	7.30	0.68%	0.27%	0.68%	0.55%
120	7.50	5.80	7.00	6.77	7.00	7.20	7.90	7.37	0.32%	0.59%	1.55%	0.82%
122	5.90	4.90	6.10	5.63	6.80	6.10	7.30	6.73	1.59%	0.64%	2.27%	1.50%
125	3.40	3.50	4.50	3.80	5.30	5.20	5.40	5.30	2.05%	1.91%	2.18%	2.05%
127	3.00	4.40	2.50	3.30	6.10	4.10	4.00	4.73	3.82%	1.09%	0.95%	1.95%
130	6.20	3.00	2.30	3.83	4.90	4.40	3.90	4.40	1.45%	0.77%	0.09%	0.77%
133	2.20	3.60	3.40	3.07	4.20	4.30	5.10	4.53	1.55%	1.68%	2.77%	2.00%
136	1.90	2.20	1.70	1.93	2.20	2.20	3.40	2.60	0.36%	0.36%	2.00%	0.91%
139	2.00	1.90	1.40	1.77	2.10	2.80	3.20	2.70	0.45%	1.41%	1.95%	1.27%
142	1.80	1.50	2.50	1.93	4.30	3.60	2.50	3.47	3.23%	2.27%	0.77%	2.09%
146	1.00	1.20	0.60	0.93	1.10	0.90	1.30	1.10	0.23%	-0.05%	0.50%	0.23%
<b>Total</b>	<b>383.80</b>	<b>395.80</b>	<b>369.60</b>	<b>383.07</b>	<b>456.60</b>	<b>456.60</b>	<b>457.00</b>	<b>456.73</b>	<b>100.27%</b>	<b>100.27%</b>	<b>100.82%</b>	<b>100.45%</b>

Validity parameter: After 45 days the rate of biodegradation of the reference material has to be 70% or higher. This requirement has been fulfilled.

(CO<sub>2</sub>)<sub>B</sub> = Measured cumulative CO<sub>2</sub> production by blank

(CO<sub>2</sub>)<sub>R</sub> = Measured cumulative CO<sub>2</sub> production by reference material

(CO<sub>2</sub>)<sub>Bmean</sub> = [(CO<sub>2</sub>)<sub>B1</sub>+(CO<sub>2</sub>)<sub>B2</sub>+(CO<sub>2</sub>)<sub>B3</sub>] / 3

D = [(CO<sub>2</sub>)<sub>R</sub> - (CO<sub>2</sub>)<sub>Bmean</sub>] / ThCO<sub>2</sub>

D<sub>mean</sub> = (D<sub>R1</sub>+D<sub>R2</sub>+D<sub>R3</sub>) / 3

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The rate of biodegradation of the reference material is 100.45% after 146 days.

The rate of biodegradation of the test material, compared to the reference material (reference is set to 100%) is 89.78%.

The peaks in the diagrams "CO<sub>2</sub> production over time" are caused by not measuring the amount of CO<sub>2</sub> on weekends, therefore the amount on Mondays also contains the amount absorbed during the weekend and is higher than on other weekdays.

For adjusting humidity in the composting vessels water was carefully added to the vessel once a week.

The concentration of oxygen was checked every day during the first week of the test and once a week afterwards. For aerobic conditions the concentration of oxygen shall be higher than 6%. The concentration did not fall below 18% during the test.

-End-



# General Terms and Conditions of Business of TÜV Rheinland in Greater China

- Scope**
    - These General Terms and Conditions of Business of TÜV Rheinland in Greater China (GTBC) is made between the client and one or more member entities of TÜV Rheinland in Greater China as applicable as the case may be ("TÜV Rheinland"). The Greater China refers to Mainland China, Hong Kong and Taiwan. The client hereby declares:
      - (a) natural person capable to form legally binding contracts under the applicable laws who concludes the contract for the purpose of a daily use;
      - (b) the incorporated or unincorporated entity duly organized, validly existing and capable to form legally binding contracts under the applicable law.
    - The following terms and conditions apply to agreed services including consultancy services, information, deliveries and similar services as well as ancillary services and other secondary obligations provided within the scope of contract performance.
    - Any standard terms and conditions of the client of any nature shall not apply and shall hereby be expressly excluded. No standard contractual terms and conditions of the client shall form part of the contract even if TÜV Rheinland does not explicitly object to them.
    - In the context of an ongoing business relationship with the client, the GTBC shall also apply to future contracts with the client without TÜV Rheinland having to refer to them separately in each individual case.
  - Quotations**

Unless otherwise agreed, all quotations submitted by TÜV Rheinland can be changed by TÜV Rheinland without notice prior to its acceptance and confirmation by the other party.
  - Coming into effect and duration of contracts**
    - The contract shall come into effect for the agreed terms upon the quotation letter of TÜV Rheinland or a contractually agreed document being signed by both parties, or upon the works required by the client being carried out by TÜV Rheinland. If the client instructs TÜV Rheinland without receiving a quotation from TÜV Rheinland (quotation), TÜV Rheinland is, in its sole discretion, entitled to accept the order by giving with notice of such acceptance (including notice sent via electronic means) or by performing the requested services.
    - The contract term starts upon the coming into effect of the contract in accordance with article 3.1 and shall continue for the term agreed in the contract.
    - If the contract provides for an extension of the contract term, the contract term will be extended by the term provided for in the contract unless terminated in writing by either party with a seven-day notice prior to the end of the contractual term.
  - Scope of services**
    - The scope and type of the services to be provided by TÜV Rheinland shall be specified in the contractually agreed service scope of TÜV Rheinland by both parties. If no such separate service scope of TÜV Rheinland exists, then the written confirmation of order by TÜV Rheinland shall be decisive for the service to be provided.
    - The agreed services shall be performed in compliance with the regulations in force at the time the contract is entered into.
    - TÜV Rheinland is entitled to determine, in its sole discretion, the method and nature of the assessment unless otherwise agreed in writing or if mandatory provisions require a specific procedure to be followed.
    - On execution of the work there shall be no simultaneous assumption of any guarantee of the correctness (proper quality) and working order of either tested or examined parts nor of the installation as a whole and its upstream and/or downstream processes, organizations, use and application in accordance with regulations, nor of the systems on which the installation is based. In particular, TÜV Rheinland shall assume no responsibility for the construction, selection of materials and assembly of installations examined, nor for their use and application in accordance with regulations, unless these questions are expressly covered by the contract.
    - In the case of inspection work, TÜV Rheinland shall not be responsible for the accuracy or checking of the safety programmes or safety regulations on which the inspections are based, unless otherwise expressly agreed in writing.
    - If mandatory legal regulations and standards or official requirements for the agreed service change after conclusion of the contract, with written notice to the client, TÜV Rheinland shall be entitled to additional remuneration for rendering additional expenses.
    - The services to be provided by TÜV Rheinland under the contract are agreed exclusively with the client. A contract of third parties with the services of TÜV Rheinland, as well as making available of and providing contents in the work results (test reports, test results, expert reports, etc.) is not part of the agreed services. This also applies if the client passes on work results - in full or in extracts - to third parties in accordance with clause 11.4.
  - Performance period/dates**
    - The contractually agreed period/dates of performance are based on estimates of the work involved which are prepared in line with the details provided by the client. They shall only be binding if being confirmed as binding by TÜV Rheinland in writing.
    - If binding periods of performance have been agreed, these periods shall not commence until the client has submitted all required documents to TÜV Rheinland.
    - Articles 5.1 and 5.2 also apply, even without express approval by the client, to all extensions of agreed period/dates of performance not caused by TÜV Rheinland.
    - TÜV Rheinland is not responsible for a delay in performance, in particular if the client has not fulfilled his duties to cooperate in accordance with clause 6.1 or has not done so in time and, in particular, has not provided TÜV Rheinland with all documents and information required for the performance of the service as specified in the contract.
    - If the performance of TÜV Rheinland is delayed due to unforeseeable circumstances such as force majeure, strikes, business disruptions, governmental regulations, transport obstacles, etc., TÜV Rheinland is entitled to postpone performance for a reasonable period of time which corresponds at least to the duration of the hindrance plus any time period which may be required to repair performance.
  - The client's obligation to cooperate**
    - The client shall guarantee that all cooperation required on its part, its agents or third parties will be provided in good time and in no cost to TÜV Rheinland.
    - Design documents, supplies, auxiliary staff, etc. necessary for performance of the services shall be made available free of charge by the client. Moreover, cooperative action of the client must be undertaken in accordance with legal provisions, standards, safety regulations and accident prevention instructions. And the client represents and warrants that:
      - a) it has required statutory qualifications;
      - b) the product, service or management system to be certified complies with applicable laws and regulations; and
      - c) it doesn't have any illegal and dishonest behaviours or is not included in the list of Enterprises with Serious Illegal and Dishonest Acts of People's Republic of China.If the client breaches the aforesaid representations and warranties, TÜV Rheinland is entitled to i) immediately terminate the contractor without prior notice, and ii) withdraw the issued testing report/certificates if any.
    - The client shall bear any additional cost incurred on account of work having to be redone or being delayed as a result of late, incorrect or incomplete information provided by or lack of proper cooperation from the client. Even where a fixed or maximum price is agreed, TÜV Rheinland shall be entitled to charge extra fees for such additional expense.
  - Prices**
    - If the scope of performance is not laid down in writing when the order is placed, invoicing shall be based on costs actually incurred. If no price is agreed in writing, invoicing shall be made in accordance with the price list of TÜV Rheinland valid at the time of performance.
    - Unless otherwise agreed, work shall be invoiced according to the progress of the work.
    - If the execution of an order extends over more than one month and the value of the contract or the agreed fixed price exceeds €2,500.00 or equivalent value in local currency, TÜV Rheinland may demand payments on account or in instalments.
  - Payment terms**
    - All invoice amounts shall be due for payment without deduction on receipt of the invoice. No discounts and rebates shall be granted.
    - Payments shall be made to the bank account of TÜV Rheinland as indicated on the invoice, stating the invoice and client numbers.
    - In cases of default of payment, TÜV Rheinland shall be entitled to claim default interest at the applicable short-term interest rate publicly announced by a reputable commercial bank in the country where TÜV Rheinland is located. At the same time, TÜV Rheinland reserves the right to claim further damages.
    - Should the client default in payment of the invoice despite being granted a reasonable grace period, TÜV Rheinland shall be entitled to cancel the contract, withdraw the certificate, claim damages for non-performance and refuse to continue performance of the contract.
    - The provisions set forth in article 8.4 shall also apply in cases involving retained cheques. Cancellation of payment commencement and recovery proceedings against the client's assets or cases in which the commencement of insolvency proceedings has been dismissed due to lack of assets.
  - Objections to the invoice of TÜV Rheinland shall be submitted in writing within two weeks of receipt of the invoice.**
  - TÜV Rheinland shall be entitled to demand appropriate advance payments.
  - TÜV Rheinland shall be entitled to raise its fees at the beginning of a month if overhead and/or purchase costs have increased. In this case, TÜV Rheinland shall notify the client in writing of the rise in fees. This notification shall be issued one month prior to the date on which the rise in fees shall come into effect (period of notice of changes in fees). If the rise in fees remains under 5% per contract year, the client shall be obliged to accept the new fee. If the rise in fees exceeds 5% per contract year, the client shall be entitled to terminate the contract by the end of the period of notice. If changes in fees, if the contract is not terminated, the changed fees shall be deemed to have been agreed upon by the time of the expiry of the notice period.
  - Only legally established and undisputed claims may be offset against claims by TÜV Rheinland.
- Acceptance of work**
  - Any part of the work result ordered which is complete in itself may be presented by TÜV Rheinland for acceptance as an instalment. The client shall be obliged to accept it immediately.
  - If acceptance is required or contractually agreed in an individual case, this shall be deemed to have taken place two (2) weeks after completion and handover of the work, unless the client refuses acceptance within this period starting at least one functional breach of contract by TÜV Rheinland.
  - The client is not entitled to refuse acceptance due to insignificant breach of contract by TÜV Rheinland.
  - If acceptance is excluded according to the nature of the work performance of TÜV Rheinland the completion of the work shall take its place.
  - If the client was unable to make use of the time windows provided for within the scope of a certification procedure for auditing/performance by TÜV Rheinland and the certificate is issued, the client shall be liable to pay a lump-sum compensation of 10% of the order amount as compensation for expenses. The client reserves the right to prove that the TÜV Rheinland has incurred no damage whatsoever or only a considerably lower damage than the above lump sum.
  - Insofar as the client has undertaken in the contract to accept services, TÜV Rheinland shall also be entitled to charge lump-sum damages in the amount of 10% of the order amount as compensation for expenses if the service is not called within one year after the order has been placed. The client reserves the right to prove that the TÜV Rheinland has incurred no damage whatsoever or only a considerably lower damage than the above mentioned lump sum.
- Confidentiality**
  - For the purpose of these terms and conditions, "confidential information" means all information, documents, images, drawings, know-how, data, samples and project documents of which one party (the "disclosing party") hands over, transfers or otherwise discloses to the other party (the "receiving party"), and the confidential information created during performance of work by TÜV Rheinland, including product testing data, defects, reports of the technical state and related reports. Confidential information also includes paper copies and electronic copies of such information. Confidential information is expressly not the data and know-how collected, compiled or otherwise obtained by TÜV Rheinland (non-personal) within the scope of the provision of services by TÜV Rheinland. TÜV Rheinland is entitled to store, further develop and pass on the data obtained in connection with the provision of services for the purpose of developing new services, improving services and analyzing the provision of services.
  - The disclosing party shall mark all confidential information disclosed in written form as confidential before passing it onto the receiving party. The same applies to confidential information transmitted by e-mail. If confidential information is disclosed orally, the receiving party shall be appropriately informed in advance and the disclosing party shall confirm in writing the confidentiality nature of the information within five working days of oral disclosure. Where the disclosing party fails to do so within the stipulated period, the receiving party shall not take any confidentiality obligations hereunder towards such information.
  - All confidential information which the disclosing party transfers or otherwise discloses to the receiving party which is created during performance of work by TÜV Rheinland:
    - a) may only be used by the receiving party for the purposes of performing the contract, unless expressly otherwise agreed in writing by the disclosing party;
    - b) may not be copied, distributed, published or otherwise disclosed by the receiving party, unless this is necessary for fulfilling the purposes of the contract or TÜV Rheinland is required to pass on confidential information, inspection reports or documentation to the government authorities, justice, court, arbitration bodies or third parties that are involved in the performance of the contract;
    - c) must be treated by the receiving party with the same level of confidentiality as the receiving party uses to protect its own confidential information, but never with a lesser level of confidentiality than that which is reasonably required.
  - The receiving party may disclose any confidential information received from the disclosing party to its technical staff and related reports. Confidential information also includes information required for the contract. The receiving party undertakes to oblige these employees to observe the same level of secrecy as set forth in this confidentiality clause.
  - Information for which the receiving party can furnish proof that:
    - a) it was generally known at the time of disclosure or has become general knowledge without violation of the confidentiality clause by the receiving party; or
    - b) it was disclosed to the receiving party by a third party entitled to disclose this information; or
    - c) the receiving party already possessed this information prior to disclosure by the disclosing party;the receiving party developed it itself, irrespective of disclosure by the disclosing party, shall not be deemed to constitute "confidential information" as defined in the confidentiality clause.
  - All confidential information shall remain in the property of the disclosing party. The receiving party hereby agrees to immediately i) return all confidential information, including all copies, to the disclosing party, and/or ii) on request by the disclosing party, to destroy all confidential information, including all copies, and confirm the destruction of this confidential information to the disclosing party in writing, at any time if so requested by the disclosing party but at the latest and without special request after termination or expiry of the contract. This does not extend to include reports and certificates prepared for the client solely for the purpose of fulfilling the obligations under the contract, which shall remain with the client. However, TÜV Rheinland is entitled to make file copies of such reports, certificates and confidential information that form the basis for preparing these reports and certificates in order to evidence the correctness of its results and for general documentation purposes required by law, regulations and the requirements of working procedures of TÜV Rheinland.
  - From the start of the contract and for a period of three years after termination or expiry of the contract, the receiving party shall maintain strict secrecy of all confidential information and shall not disclose this information to any third parties or use it for itself.
- Copyrights and rights of use, publications**
  - TÜV Rheinland shall retain all exclusive copyrights in the reports, expert reports/opinions, test reports/results, results, calculations, presentations etc. prepared by TÜV Rheinland, unless otherwise agreed by the parties in a separate agreement. As the owner of the copyrights, TÜV Rheinland is free to grant others the right to use the work results for individual or all types of use ("right of use").
  - The client receives a simple, unlimited, non-transferable, non-sublicensable right of use to the contents of the work results produced within the scope of the contract, unless otherwise agreed by the parties in a separate agreement. The client may only use such reports, expert reports/opinions, test reports/results, results, calculations, presentations etc. prepared within the scope of the contract for the contractually agreed purpose.
  - The transfer of right of use of the generated work results regulated in clause 11.2 of the GTBC is subject to full payment of the remuneration agreed in favour of TÜV Rheinland.
  - The client may use work results only complete and unaltered. The client may only pass on the work results in full unless TÜV Rheinland has given its prior written consent to the partial passing on of work results.
  - Any publication or duplication of the work results for advertising purposes or any further use of the work results beyond the scope regulated in clause 11.2 needs the prior written approval of TÜV Rheinland in each individual case.
  - TÜV Rheinland may revoke a once given approval according to clause 11.5 at any time without giving reasons. In this case, the client shall stop the transfer of the work results with its own expense and, as far as possible, to withdraw publications.
  - The consent of TÜV Rheinland to publication or duplication of the work results does not entitle the client to use the corporate logo, corporate design or certification marks of TÜV Rheinland.
- Liability of TÜV Rheinland**
  - Irrespective of the legal basis, to the fullest extent permitted by applicable law, in the event of a breach of contractual obligations or tort, the liability of TÜV Rheinland for all damages, losses and reimbursement of expenses caused by TÜV Rheinland, its legal representatives and employees shall be limited to i) in the case of a contract with a fixed price, three times the overall fee for the entire contract; ii) in the case of a contract for annually recurring services, the agreed annual fee; iii) in the case of a contract expressly charged on a time and material basis, a maximum of 20,000 Euro or equivalent amount in local currency; and iv) in the case of a framework agreement that provides for the possibility of placing individual orders, three times of the maximum order value.
- Terms of the contract are a special order under which the damages or losses have occurred. Notwithstanding the above, in the event that the total and accumulated liability calculated according to the foregoing provisions exceeds 2.5 Million Euro or equivalent amount in local currency, the total liability of TÜV Rheinland under the contract shall be only limited to and shall not exceed 2.5 Million Euro or equivalent amount in local currency.
- The limitation of liability according to article 12.1 above shall not apply to damages and/or losses caused by intentional or gross negligence on the part of TÜV Rheinland or its vicarious agents. Such limitation shall not apply to damages for a person's death, physical injury or illness.
- In cases involving a fundamental breach of contract, TÜV Rheinland will be liable even where minor obligations have been fulfilled. For this purpose, a "fundamental breach" is a breach of a material contractual obligation, the performance of which permits the due performance of the contract. In the event of a violation, TÜV Rheinland shall be entitled to terminate the contract. Any claim for damages or a possible consequence of such breach of contract at the time of the breach (reasonably foreseeable damages), unless any of the circumstances described in article 12.2 applies.
- TÜV Rheinland shall not be liable for the acts of the personnel made available by the client to support TÜV Rheinland in the performance of its services under the contract, unless such personnel made available is regarded as vicarious agent of TÜV Rheinland. If TÜV Rheinland is not liable for the acts of the personnel made available by the client under the foregoing provision, the client shall indemnify TÜV Rheinland against any claims made by third parties and/or in connection with such personnel's acts.
- Unless otherwise contractually agreed in writing, TÜV Rheinland shall only be liable under the contract to the client.
- The limitation periods for claims for damages shall be based on statutory provisions.
- None of the provisions of this article 12 changes the burden of proof to the disadvantage of the client.
- Export control**
  - When passing on the services provided by TÜV Rheinland or parts thereof to third parties in Greater China or other regions, the client must comply with the respectively applicable regulations of national and international export control law.
  - The performance of a contract with the client is subject to the proviso that there are no obstacles to performance due to rational or internal foreign trade regulations or embargo and/or sanctions. In the event of a violation, TÜV Rheinland shall be entitled to terminate the contract with immediate effect and the client shall compensate for the losses incurred thereby by TÜV Rheinland.
- Data protection notice**

TÜV Rheinland processes personal data of the client for the purpose of fulfilling this contract. In addition, TÜV Rheinland also processes the data for other legal purposes in accordance with the relevant legal basis. The personal data of the client will only be disclosed to other natural or legal persons if the legal requirements are met. This also applies to transfers to third countries. The personal data will be deleted immediately as soon as a corresponding reason for deletion arises. Data subjects may exercise the following rights: request information, right of access, right of deletion, right of processing limitation, right of objection, right of data transferability. In addition, persons concerned by the data processing have the right to revoke their consent at any time with effect for the future, as well as the right to file a complaint with the competent data protection or supervisory authority. For further details on the processing of personal data by TÜV Rheinland as the person responsible or contract processor, please refer to the respective data protection information. You can contact the Group Data Protection Officer of TÜV Rheinland by e-mail at [datenschutz@tuv.com](mailto:datenschutz@tuv.com) or by post at the following address: TÜV Rheinland AG, c/o Group Data Protection Officer, Am Grauen Stein, 51105 Cologne, Germany.
- Test material, transport risk and storage**
  - The risk and costs for freight and transport of documents or test material to and from TÜV Rheinland as well as the costs of necessary disposal measures shall be borne by the client.
  - Any destroyed and otherwise worthless test material will be disposed of by TÜV Rheinland for the client at the expense of the client, unless otherwise agreed.
  - Undamaged test material shall be stored by TÜV Rheinland for four (4) weeks after completion of the test. If a longer storage period is desired, TÜV Rheinland charges an appropriate storage fee.
  - After the expiry of the 4 weeks or any longer period agreed upon, the test material will be disposed of by TÜV Rheinland for the client for a fee in accordance with clause 15.2.
- Termination of the contract**
  - Notwithstanding clause 3.3 of the GTBC, TÜV Rheinland and the client are entitled to terminate the contract in its entirety or, in the case of services combined in one contract, each of the combined parts of the contract individually and independently of the continuation of the remaining services with six (6) months' notice to the end of the contractually agreed term.
  - For good cause, TÜV Rheinland may consider giving a written notice to the client to terminate the contract which includes but is not limited to the following:
    - a) the client does not immediately notify TÜV Rheinland of changes in the conditions within the company which are relevant for certification or signs of such changes;
    - b) the client misuses the certification or certification mark or uses it in violation of the contract;
    - c) in the event of several consecutive delays in payment (at least three times);
    - d) a substantial deterioration of the financial circumstances of the client occurs and as a result the payment claims of TÜV Rheinland under the contract are considerably endangered and TÜV Rheinland cannot reasonably be expected to continue the contractual relationship;
  - In the event of termination with written notice by TÜV Rheinland for good cause, TÜV Rheinland shall be entitled to a lump-sum claim for damages against the client if the conditions of a claim for damages exist. In this case, the client shall owe 15% of the remuneration to be paid until the end of the fixed contract term as lump-sum compensation. The client reserves the right to prove that there is no damage or a considerably lower damage. TÜV Rheinland reserves the right to prove a considerably higher damage in individual cases.
  - TÜV Rheinland is not entitled to terminate the contract with written notice if the client has not been able to make use of the time windows for auditing/service provision provided by TÜV Rheinland within the scope of a certification procedure and the certificate therefore has to be withdrawn (for example during the performance of monitoring audits). Clause 16.3 applies accordingly.
- Partial invalidity, written form, place of jurisdiction and dispute resolution**
  - All amendments and supplements must be in writing in order to be effective. This also applies to amendments and supplements to this clause 17.1.
  - Should one or several of the provisions under the contract and/or these terms and conditions be or become ineffective, the contracting parties shall replace the invalid provision with a legally valid provision that comes closest to the content of the invalid provision in legal and commercial terms.
  - Unless otherwise stipulated in the contract, the governing law of the contract and these terms and conditions shall be chosen following the rules as below:
    - a) If TÜV Rheinland in question is legally registered and existing in the People's Republic of China, the contracting parties hereby agree that the contract and these terms and conditions shall be governed by the laws of the People's Republic of China.
    - b) If TÜV Rheinland in question is legally registered and existing in Taiwan, the contracting parties hereby agree that the contract and these terms and conditions shall be governed by the laws of Taiwan.
    - c) If TÜV Rheinland in question is legally registered and existing in Hong Kong, the contracting parties hereby agree that the contract and these terms and conditions shall be governed by the law of Hong Kong.
  - Any dispute in connection with the contract and these terms and conditions or the execution thereof shall be settled friendly through negotiations.
    - Unless otherwise stipulated in the contract, if no settlement or an agreement in respect of the extension of the negotiation period can be reached within two months of the arising of the dispute, the dispute shall be submitted:
      - a) in the case of TÜV Rheinland in question being legally registered and existing in the People's Republic of China, to the China International Economic and Trade Arbitration Commission (CIETAC) to be settled by arbitration under the Arbitration Rules of CIETAC in force when the arbitration is submitted. The arbitration shall take place in Beijing, Shanghai, Shenzhen or Chongqing as appropriately chosen by the claiming party;
      - b) in the case of TÜV Rheinland in question being legally registered and existing in Taiwan, to the Chinese Arbitration Association (Tapei Branch) to be arbitrated in accordance with its then current Rules of Arbitration. The arbitration shall take place in Taipei;
      - c) in the case of TÜV Rheinland being legally registered and existing in Hong Kong, to the Hong Kong International Arbitration Centre (HKIAC) to be settled by arbitration under the HKIAC Administered Arbitration Rules, in force when the Notice of Arbitration is submitted in accordance with these rules. The arbitration shall take place in Hong Kong.The decision of the relevant arbitration tribunal shall be final and binding on both parties. The arbitration fees shall be borne by the losing party.