



中析研究所

分析·研发·检测

Beijing ZKGX Institute of Science and Technology
Beijing ZKGX Institute of Science and Technology Shandong Branch

Report ID:ZX241218-C010701-02

Date:JUN.16,2025

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Test Report

Report ID: ZX241218-C010701-02

Sample name: Anaerobic biodegradable EPS



Client: GP Materials Technology (Jiangsu) Co.,Ltd

Test type: Commissioned inspection

Test requirement: Test according to client's requirement

Test result: See next page



Scan the query report for authenticity

Compile: 袁梦锦

Review: 孙莲强

Issue: 董兰



Research Test Report

Research test result:

- I. Test Sample: Anaerobic Biodegradable EPS
- II. Test Period: JAN.10, 2025 – MAY.10, 2025
- III. Test Method: ASTM D5511-12 Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials Under High-Solids Anaerobic-Digestion Conditions
- IV. Inoculum Preparation:
The inoculum was prepared using anaerobically digested household waste as the sole feedstock. Organic fragments with particle sizes <60 mm were selected from anaerobic digestion residues processed under dry conditions. The prepared inoculum underwent a 7-day short-term fermentation at the same operational temperature to minimize its intrinsic biodegradation activity during the decomposition of large, readily degradable samples.
- V. Test and Reference Material Preparation: Determine the total organic carbon content of the test and reference materials, and ensure that each container contains at least 8g of total organic carbon in 20g of total dry solids. The experimental material is anaerobic biodegradable EPS.
- VI. Experimental process: Take out enough inoculum (about 10kg) from the fermentation container and mix it evenly by hand. For each container containing 1kg of inoculum with a wet weight, add test or reference materials containing 15-20 g of volatile solids. Add at least 500g of wet weight inoculum to each container and stir for 2-3 minutes. Fill only the inoculum into three blank containers and manually stir for 2-3 minutes using the same force as the test and reference





Research Test Report

Research test result:

materials. Introduce the mixture into a digestion container, disperse and gently press to ensure consistent density throughout. Place the container in a water bath or incubator and connect it to a gas detection or collection system. The total stirring and connection time should not exceed 2 hours, and turn on the water bath heating device.

The digestion container is cultured for 15 days under dark or low light conditions at a temperature of 52 ± 2 °C. The amount of biogas produced at different time intervals is measured, and frequent observation and measurement are required in the early stage of the experiment. The number of observations can be reduced over time.

At the end of the experiment, cool the digestion container to room temperature, determine the total gas production of the experiment, and record the room temperature and air pressure. Within the first 15 days, measure the gas production every 3 days, and then measure every 5 days thereafter.

VII. Confirmation of the validity of the experimental results

1. After 30 days of testing, the biodegradation rate of the reference material exceeded 70%;
2. After the experiment, the deviation between the biodegradation rate of each reference material digestion container and the average value shall not exceed 20%.



Research Test Report

Research test result:

VIII. Experimental conclusion



Item	Calculate the average biodegradation rate based on the amount of carbon released(120d), %	Observation
Test sample	90.8	Almost completely decomposed
Reference material	95.0	Almost completely decomposed

Item	Degradation rate of test material/degradation rate of reference material(120d), %
Relative degradation rate	95.6



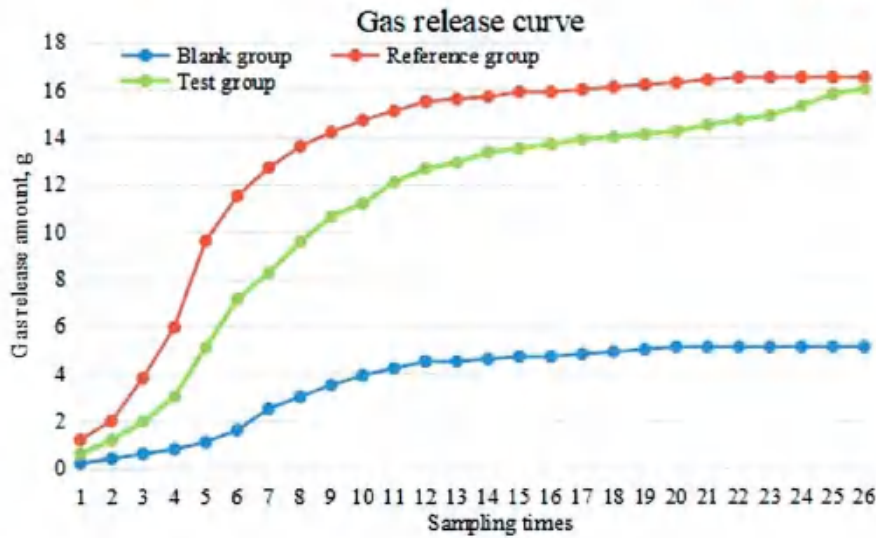
Research Test Report



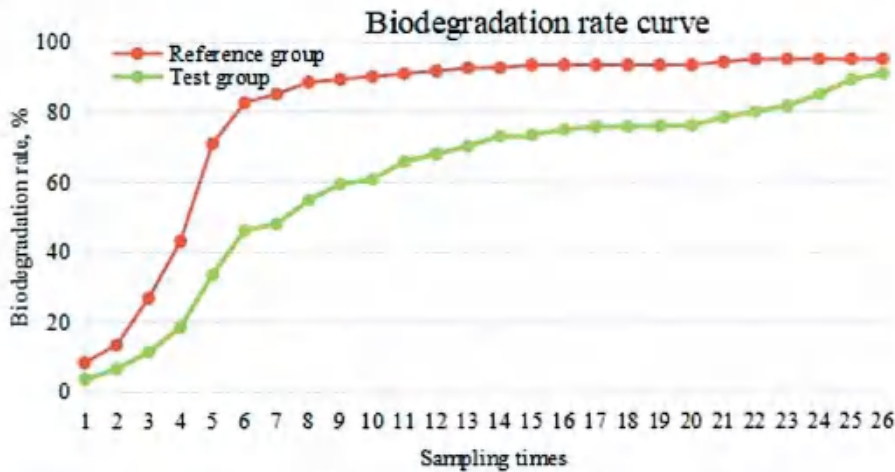
Research test result:

IX. Experimental data

1. Gas (carbon) release curve



2. Biodegradation rate curve





Sample picture:



Only Responsible for The Received Sample

*** (End) ***



Announcements

1. Both parties must comply with the provisions of the general service terms in the analysis of entrusted registration form/service contract.
2. The report is invalid without the signature of the responsible person of the service party. The report is invalid without the special seal for scientific research and test of "Beijing ZKGX Research Institute of Science and Technology".
3. Any result of the test application will be strictly confidential to the client. Unless required by relevant government departments, laws or courts, the service party shall not discuss or disclose the results to any third party without the consent of the principal.
4. Any copy, transfer, misappropriation, false use, alteration or any other form of tampering of the report in whole or in part is invalid. The service party shall strictly investigate the corresponding legal liability for the above-mentioned acts.
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