

## Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting

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### Abstract

Recently, biodegradable plastic has been largely studied for applications<sup>1)</sup> in molded articles and packaging materials but the methods for measuring biodegradability of polymers have been not studied within the country. In ISO 14855, there is disclosed a method for the determination of aerobic biodegradability in composting, but the method is not matching in domestic. Therefore, it is an object of the present invention to overcome the problems and to provide a method of measuring biodegradability of polymer.

A titration method<sup>2)</sup> was used for measuring biodegradability of polymers. Carbon dioxide evolved by the decomposition of the polymer under controlled composting conditions was captured with a mixture solution of potassium hydroxide (KOH) and barium chloride (BaCl<sub>2</sub>). It was titrated with the HCl solution to calculate the total amount of carbon dioxide evolved.

Test substance; Cellulose, PCL(polycaprolactone), and PBAS(Poly(butylene adipate-co-succinate)) were tested on biodegradability. The measured results have reproducibility.

### References

1. Tokiwa, Y. A., Iwamoto, M. Koyama (1990), Development of biodegradable plastics containing polycaprolactone and/or starch, *Polym. Master. Sci. Eng.* **63**, 742-746.
2. ASTM D 5338 (1998), Standard test method for determining the aerobic biodegradation of plastic materials under controlled composting condition