

WILL IT COMPOST?

AS CURBSIDE ORGANICS PICK-UP AND THE MARKET FOR COMPOSTABLE CONSUMER PRODUCTS GROW, SO DO CONCERNS ON THE ACTUAL COMPOSTABILITY OF SOME OF THESE ITEMS. AN INDUSTRY EXPERT SHOWS US HOW TO TEST WHAT BREAKS DOWN AND WHAT DOESN'T.

-MICHELE RIGGS



In July 2010, the City of Seattle passed legislation requiring commercial entities serving or processing food products to use 100-percent compostable or recyclable single-use food service items. To be deemed compostable in King and Snohomish counties, these products must be tested and accepted by Cedar Grove Composting. Each year, Cedar Grove processes around 400,000 tons of organic debris collected from Seattle and the surrounding area. The company conducts testing of compostable food service items and maintains an online list of accepted items on its website, www.cedar-grove.com.

Cedar Grove conducts testing of compostable products for one reason: product quality. Our facility strives to maintain a high level of excellence in its finished products to comply with our clientele's wants and needs. For this reason, tests are conducted once a month in our high-tech Gore Cover facility to affirm that products will disintegrate during the composting process.

Testing the field

In 2003, Cedar Grove initially began testing compostable bags. At that time, only products with Biodegradable Products Institute (BPI)

certification were allowed into testing trials. In 2006, however, the use of compostable food serviceware was on the rise, and Cedar Grove began receiving an onslaught of products for testing. It was at this time that the decision to augment the field testing by also including laboratory result review as part of the compostable packaging acceptance protocol. With that, Cedar Grove began not only accepting BPI-certified products for testing, but also items that met the ASTM D6400 or D6868 compostability standards. If a product met Cedar Grove's more comprehensive compostability standards, a letter of acceptance was issued directly to the product manufacturer. Businesses using compostable products in the region were instructed to request these letters of acceptance from manufacturers and distributors prior to making purchasing decisions. This, in turn, led an increasing number of manufacturers to Cedar Grove's testing and review team to test products that did not require ASTM or BPI certification.

In 2008, a protocol for substrate analysis was created to identify items composed of 100-percent wood fiber paper, 100-percent clay-coated paper (without treatments or coatings), and wax-coated papers that qualified for this category. When submitting items for testing at Cedar Grove, manufacturers are required to:

- Complete a confidential profile form, providing relevant data

about the items related to their constitution, coatings and manufacturing origin.

- Submit ASTM or EN 13432 laboratory data, or their BPI certification.
- Submit multiple samples for testing and retention.

BPI certification and laboratory results ensure that products do not contain high levels of heavy metals, information showing that products actually degrade through microbial assimilation and convert to biomass (versus simply fragmenting into visually non-detectable pieces) and that there will be no toxicological effects to plant health and growth after the product fully disintegrates. These characteristics are extremely important in ensuring the final compost made can be used as a viable and beneficial soil amendment.

Taking the test

Products submitted to Cedar Grove are reviewed, logged and photographed with a ruler to record size and scale prior to field testing. Each sample is labeled with an identification number, then placed into a nylon mesh bag with 20-percent commingled products to 80-percent ground feedstock (pre-process organic mixtures emulating real-life feedstock blends of green material and food scraps). These nylon bags are then placed in a compost heap and covered with a Gore cover and placed on an aerated pad to begin processing. After 28 days, the bags are located and removed while the remainder of the heap is moved across the facility via conveyor belt to be used to build another heap on an aerated pad. The moisture content of the test bags and heap material is then checked to determine if the material requires hydration

prior to going into the next composting phase. The bags are then placed back into the heap and covered for two consecutive, separate 14-day periods. Following this, the bags are then extracted from the pile and left to dry for 4 days.

Pass or fail?

Once this process has been completed, the long, painstaking process of sifting through each bag to locate any material that has not disintegrated begins. Pieces of material are placed in accordance with the item's image data on file, and the pieces left are placed together, like putting together a jigsaw puzzle. Pictures are taken of the product fragments, then labeled and stored. Items must degrade by 95 percent visually to be accepted into Cedar Grove Composting facilities.

It is not uncommon for items designed and marketed as biodegradable or compostable to fall short of Cedar Grove Composting's requirements for acceptance. Out of over 2,000 line items field tested and reviewed under the company's substrate analysis, only 750 have been accepted. This is primarily due to variances in existing parameters

between Cedar Grove's composting process, and those used per the ASTM D6400 and D6868 specification, which refer the disintegration test to use the parameters in ASTM D5338. These variances in inoculate create different outcomes of disintegration by microbial action (see Table 1).



Cedar Grove Composting in Everett, Washington



Heap used for testing at Cedar Grove



Passed



Failed

Testing at the facility

At Cedar Grove's facility, the testing process begins in the tipping building, where the operator mixes the appropriate recipe for finished compost. Using incoming feedstock, a worker must pick and choose materials that will create a 30:1 carbon-to-nitrogen ratio. Once this material is placed on an aerated pad and covered, it does not take long for temperatures to reach around 170°F. Over the course of the process, the temperature decreases to about 140°F, just prior to screening.

Cedar Grove not only conducts scientific tests of compostability, but also requires the additional step of conducting real-world disintegration testing. Currently there are many products that claim to be "Earth Friendly" or "Biodegradable" and some that claim to be compostable, with no scientific documentation to support that assertion. This makes it extremely difficult for consumers in the Northwest to understand what is really compostable and what is not. When non-compostable products are introduced into the composting process, they end up as contamination in finished product – and in the back yards of Cedar Grove customers.

Keeping contamination out at the source

Currently, Cedar Grove processes both residential and commercial commingled organic waste. It's an ongoing battle to keep contamination out of the feedstock. Tracking contamination back to a commercial entity is not easy, but can be done through the haulers. However, tracking contamination back to the millions of residential clients is virtually impossible. For this reason, Cedar Grove has collaborated with multiple packaging manufacturers and distributors to innovate

Table 1 | Testing variances

	<u>Cedar Grove Composting</u>	<u>ASTM D5338</u>
Composting Material	Incoming feedstock	Stable compost
C:N Ratio	30:1	C:N Ratio of 13:1
Temperature	170°F-140°F	136°F
Test Duration	49-60 days	84 days

Source: Cedar Grove Composting, 2011

the local sorting capability via a color-marked product identification system to create a more practical way to sort compostables.

The outcome of that collaboration resulted in a business model consisting of a collection of Cedar Grove-accepted compostable products that are printed in a brown marked custom print, also known as the Cedar Grove Packaging line of compostables. Manufacturers that have met the Cedar Grove testing and acceptance requirements and manufacture their products in North America may apply to be part of this identification program. This makes it easy for contamination to be identified not only at the composting facility, but also by truck drivers and consumers. In this way, Cedar Grove has worked with key stakeholders in the business community to innovate and collaborate on ways to eliminate the guess work in sorting compostables from trash and mixed recyclables.

Conclusions in compostability

Cedar Grove has responded to municipal and consumer needs to expand organics recycling to include the appropriate food service packaging and the food that comes along with it. Cedar Grove's expansion of its program has taken thoughtful consideration, resources and the development of new relationships

in order to carry the program forth with the highest possibility for success. While we have created a solution for our region, different parts of the country have different standards for what is acceptable in their organic waste programs.

As the world of compostable service-ware grows, and ever-emerging commercial and municipal composting programs are being encouraged and built, the need to take a pragmatic approach to the undertaking and share best management practices, triumphs and successes in reviewing and accepting these materials also grows. Cedar Grove is committed to continued work and collaboration with cities, counties, businesses, consumers, haulers and manufacturers to ultimately make organics recycling a winning program for the resident and consumer wanting to do the right thing by keeping materials out of landfills. **RR**

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