



# EVERYTHING YOU NEED TO KNOW ABOUT BIOTRĒ™

## Biotrē™

Biotrē™ is a flexible packaging film made from renewable and compostable resources such as wood pulp.

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<b>Biotrē™ 1.0</b>	60% compostable/60% plant-based, renewable. <sup>1,2</sup>
<b>Biotrē™ 2.0</b>	60% compostable/nearly all plant-based, renewable film layers. <sup>2</sup>
<b>Biotrē™ 3.0</b>	Certified compostable (>90%) / majority (~80%) plant-based, renewable film layers. <sup>3</sup>

# Biotrē™ 1.0

Natural Kraft paper with a wood pulp-based barrier layer and an interior oxo-degradable polyethylene "PE" layer.

## What does that mean?

The outer layers consist of natural kraft paper and cellulose from wood pulp. These plant-based, renewable materials make up 60% of the material by weight and have been shown to break down into healthy compost in 12 weeks/90 days using ASTM D6868 test conditions.<sup>1</sup>

The interior layer is made with an additive that makes it "oxo-degrade". This additive has been shown to allow plastic to break into microscopic pieces under specific conditions over 5-10 years vs. the estimated 1,000 years needed for normal plastic. This makes up the remaining 40% of the Biotrē™ 1.0 film structure (calculation by weight does not include one-way degassing valve or zipper).

### Notes:

- Recommended disposal is in-home compost.<sup>4</sup>
- Any one-way degassing valve or zipper must be removed prior to composting.
- If the 40% PE layer is found in compost it may be removed manually and disposed in the regular trash.
- Oxo-degradation reduces the space needed for long term waste storage. EPA requirements for landfill liners and leachate removal must be observed to prevent micro-plastic from leaching into ground water.

## Additional Information

Available in our premade bags/stock line

- Block Bottom Bag, Side Gusset, Stand-up Pouch
- Sizes ranging from 8oz to 2lbs

Available for custom printed and unprinted projects

- Hot Stamping
- Digital Printing
- Flexographic Printing

Maximum weight capability: 2.2lbs

Composts best at temperatures > 136°F<sup>4</sup>



# Biotrē™ 2.0

Natural Kraft paper with a wood pulp-based barrier layer and an interior plant-based Polyethylene “PE” layer.

## What does that mean?

The outer and barrier layers are the same as Biotrē™ 1.0.

60% of the material by weight has been shown to break down into healthy compost in 12 weeks/90 days using ASTM D6868 test conditions.<sup>1</sup>

The interior layer consists of nearly all plant-based, renewable Polyethylene “PE” made from sugar cane. This is a durable, non-biodegradable layer. This robust, plant-based film makes up the remaining 40% and though it will not break down quickly, it uses a sustainable source instead of fossil fuels like typical plastics.

### Notes:

- The greenhouse gas CO<sub>2</sub> is absorbed and reduced during the plant’s growth to help prevent global climate change.
- A zipper closure made of plant-based renewable PE may be an option in the future.

## Additional Information

Available for custom printed and unprinted projects

- Flexographic Printing

Maximum weight capability: 2.2lbs

Compatible with 101RENEW Biotrē™ Degassing valve made of Plant-Based Renewable sources

Composts best at temperatures > 136°F<sup>4</sup>



# Biotrē™ 3.0

Natural Kraft paper with a wood pulp-based barrier layer and majority (~80%) plant-based renewable seal layer that is compostable. The entire material has passed ASTM D6868 testing and has received verification as compostable by the Biodegradable Products Institute (BPI).

## What does that mean?

The entire bag can be disposed by industrial composting.

- Has been shown to break down into healthy industrial compost in 12 weeks/90 days.
- BPI certification #10529237
- Biotrē™ 3.0 can be disposed in curbside composting bins, if available.
  - Please check your local waste disposal supplier for regulations.
  - If local regulations do not allow this, home composting is feasible, however it is not certified for this disposal method and, depending on the compost's conditions, may take longer to disintegrate than other organic materials like food or yard waste.
- Secondary packaging is vital
  - If the Biotrē™ 3.0 packages are being shipped in smaller packages (one bag or a small number of bags e.g., for e-commerce) they **MUST BE SHIPPED IN A BOX** and the box must be tightly packed (if there is a lot of room in the box for the packages to move around, packing materials should be used to hold the packages securely in place). A good resource for designing smaller shipping containers can be found [here](#).
  - If the Biotrē™ 3.0 packages are being shipped in bulk, again they must be in a box and they must be packed in one layer (no stacking of the packages on top of each other in the box). This means about 10-12 bags fit in a normal size bulk box.

## Additional Information

Available for custom printed and unprinted projects

- Flexographic Printing

Maximum weight capacity: 1lb

Composts best at temperatures > 136°F<sup>4</sup>



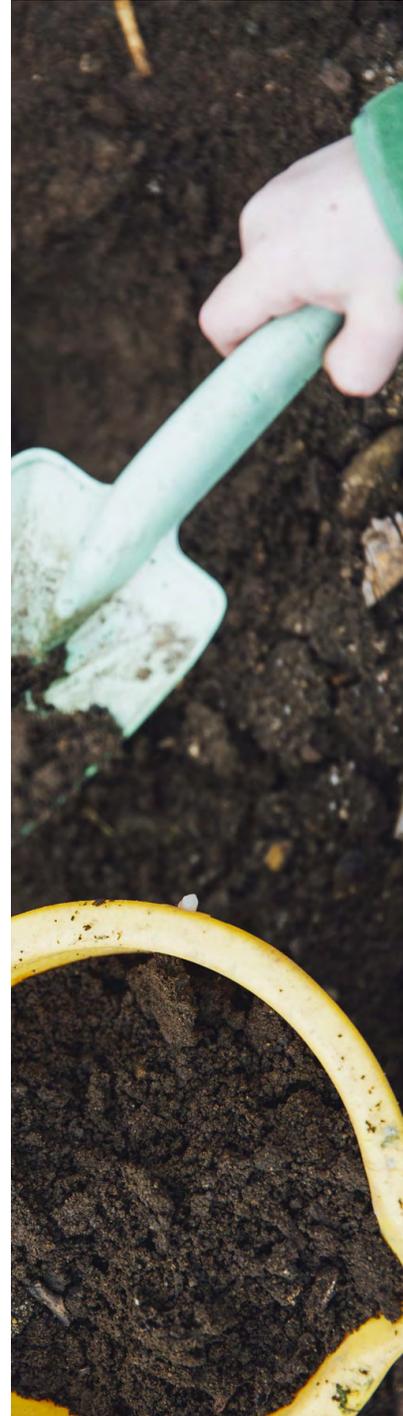
# Industrial Composting vs. Home Composting

The term “home compostable” is being redefined in our times. Ten years ago, it meant an item would disintegrate in a compost pile where an individual household disposed their food and yard waste. Now it’s beginning to have some time frames and conditions associated with the term as defined by agencies and certification bodies. For example, the European Committee for Standardization (CEN) will soon be publishing a standard called DIN EN 17427. Another agency that has their own certificate is TUV Austria. The general idea of these tests is for a bag to break down around 90% at a temperature around 58°C (136°F) in something like 26 weeks.

The other type of composting is industrial composting. In industrial composting, the composition of the compost is actively managed, the chemistry and temperature are monitored, and the compost is mixed and turned using heavy equipment. These are large scale operations designed to achieve consistent quality compost with high throughput. A good-looking, nutrient and microorganism rich compost is desired for commercial use. The most well-known test to qualify a paper/plastic material for industrial composting is ASTM D6868. This mixes the material with active compost and holds a constant temperature of 58°C (136°F). It looks for the bag to disintegrate at least 90% in 12 weeks.

Biotrē™ 1.0 and 2.0 will disintegrate 60% using the ASTM D6868 conditions, but because industrial composters need materials that disintegrate at least 90%, we don’t say these pass ASTM D6868 or are industrial compostable. We say ASTM D6868 conditions were used to show 60% disintegration. To dispose of a Biotrē™ 1.0 and 2.0 bag, we say to place the bag in your home compost. We have proven that about 60% of Biotrē™ 1.0 and 2.0 will disintegrate into healthy compost in a home managed compost pile. However, given the evolving understanding of the term “home compostable” we must be careful to differentiate between our materials which have been observed by us to disintegrate relatively quickly in home compost and those that are certified as meeting the time frame in one of the “home compostable” standards. We have not tested Biotrē™ 1.0 or 2.0 by any of the home compostable standards.

Biotrē™ 3.0 has fully passed ASTM D6868 and is industrial compostable which means it will break down 90-100% in an industrial composter. It should also break down 90-100% in a home managed compost pile, but, again, we have not run tests using any of the “home compostable” standards or certificate agencies at this time.



<sup>1</sup>Calculation of % compostable is by weight and does not include a coffee degassing valve.

<sup>2</sup>Biotrē™ 1.0 & 2.0 have been tested using ASTM D6868 test conditions to show up to 60% conversion to compost, but did not pass the requirement to have no more than 10% remaining after twelve weeks and therefore do not meet the ASTM D6868 requirements.

<sup>3</sup>Biotrē™ 3.0 – Third-party testing verified that it meets all specifications in ASTM D6868 which determines if a material will compost in large scale aerobic municipal or industrial composting where maximum throughput is a high priority and where intermediate stages of plastic biodegradation should not be visible to the end user for aesthetic reasons.

<sup>4</sup>Biotrē™ 1.0 and 2.0 should not be disposed in curbside (industrial) compost. Biotrē™ 1.0 and 2.0 do not meet the OK Compost standard but a home compost environment can be used to convert 60% of the material into healthy compost.