

imagine

THE GREEN SOLUTION

EcoPure™

The New Improved Environmental Solution



Bio-Tec Environmental's New EcoPure™ Biodegradable Plastic Solution.

EcoPure™ is Bio-Tec's second generation of additive that improves Biodegradation by 5 times the results of their previous product.

EcoPure™ is Bio-Tec Environmental's second generation additive, which once added to a resin type during the manufacturing process, renders the plastic biodegradable. Various American Standard of Testing and Measurement (ASTM) testing methods, including the ASTM D5511, which

confirms that products will biodegrade when placed into an anaerobic environment, such as a landfill, have proven that EcoPure™ is biodegradable. The ASTM D5511 has shown that EcoPure™ allows microbes to break down the structure of Polypropylene and Polyethylene at significant levels up to 45% in 14 days. The biodegradation process is started when the plastic is placed into the landfill, and the microbes, which are attracted to the plastic, colonize on the surface and begin to digest and break down the plastic. The fact that EcoPure™ works via microbes makes our product stand out from the other biodegradable and degradable products, which are broken down by heat, moisture, UV, or mechanical stress. Once

it has been placed into a landfill, EcoPure™ begins biodegrading and takes from approximately 1-5 years.

Biodegradable

Literature	2
ASTM D5511-02 Test Reports	3
Scanning Electron Microscope	4

ASTM D5511-02 Certified

ISO DIS15985 Certified

2008

Certified by third party testing labs with accreditations
CT Cert #PH-0404 NY Cert. #11471
EPA Cert. #CT-024 USDA Cert. #0976
FDA Reg #3001743770
DEA Reg. Federal #RN0281852
CT #624



EcoPure™: The Simple Environmental Solution.

When plastic is made, nutrients are extracted making the product unable to biodegrade. When you implement EcoPure™ into the plastic you are adding the nutrients back in that allow it to biodegrade in the environment. EcoPure™ is a masterbatch pellet which gets implemented in to the plastic during the melting phase, the same as colorant would be. This allows the microbes to colonize on the plastic. The microbes perform quorum sensing that sends out signals for other microbes to join in on the plastic feast. The polymer chain is scissored by the microbes and the plastic is broken down. The plastic also undergoes molecular change and the end result is Bio-mass (highly nutritious soil) and Bio-gas (Co2 in aerobic conditions, and methane in anaerobic conditions).

The EcoPure™ Incentive

Another advantage of using EcoPure™, besides helping the environment, is profitability. When our clients begin manufacturing with EcoPure™ they see an average of 13-15% higher lift for their profit margin. The consumer is recognizing the importance of earth friendly alternatives,

thus the demand for biodegradable products is growing daily. Here at our company we are seeing an average growth of 15% monthly.

The EcoPure™ Advantage

0.7% by load weight of EcoPure™ is needed to make a product biodegradable. This ensures that helping our environment is actually quite affordable. EcoPure™ works with every resin type tested thus far, and does not affect the physical properties of the products. Various trial runs have shown that EcoPure™ can withstand temperatures up to 550+ degrees F, which means that products such as ABS, SAN, Nylon, and Rubber can be made biodegradable with EcoPure™.

EcoPure™ FAQ's

The 5 Steps to a Green Plastic Product.

1. How do you add in EcoPure™.
By blending in 0.7% of EcoPure™ during the melting process you can ensure that your product will be biodegradable.

2. What Resins does EcoPure™ work with?

EcoPure™ has been tested and is easily added to, PP, PS, PE, PET, and PVC.

3. How do I store EcoPure™?

It is best if you use the EcoPure™ pellets within a 6 month period after purchasing them from Bio-Tec.

4. What can I claim when using EcoPure™?

On PS, PE, PET and PP you will be able to claim Biodegradable on our product based on 3rd party testing reports. If you would like to claim a certain timeframe you will need to do a 3rd party test result on your product specifically. We have many clients that use our testing lab for this accreditation.

5. What Products are currently using EcoPure™?

Office products to shoe midsoles use EcoPure™ additive. A client list can be provided to you upon request.

SEM and ASTM D5511-02 Reports

ASTM D5511-02 Report Overview	Sample	% Weight Loss	% Methane Generated
	7A Treated	23% Weight Loss in 14 Days.	46.20%
	7B Treated	25% Weight Loss in 14 Days.	46.20%
	8A Control	0% Weight Loss in 14 Days.	45.40%

Based on the results of the testing performed, LDPE Clear Film W/ 2% EcoPure (Treated Sample) is bio-degradable.

The 26% average weight loss in 14 days is indicative of the amount of biodegradation that has occurred.

**Full Report Available Upon Request*

The EcoPure™ Planet

With the utilization of EcoPure™ additive, we have saved over 80 Million Pounds of landfill space over an 8 year period. That is over 2150 garbage trucks full of garbage, with all of our product lines that have gone biodegradable this year alone Bio-Tec has saved over 500 garbage trucks full of trash.

The EcoPure™ Footprint

EcoPure™ is a full circle biodegradable material. Made of 100% organic material blended into a masterbatch pellet with EVA as the carrier resin. By increasing the biodegradation of plastic material, your company will create another energy source for companies and government to reclaim. This is a new trend that is being pushed by the Sierra Club and the EPA, New Jersey by 2020, will have 30% of their homes powered by methane gas a clean energy source.

The EcoPure™ Technology

EcoPure™ technology is a process which allows the product to be consumed in the environment, turning plastic into biomass (rich soil), as well as Biogas (Anaerobic) or Co2 (Aerobic). Our biodegradable additive process, made with our bio-active compounds, is compounded in the United States and makes using EcoPure™ a simple, easy-to-use biodegradable masterbatch pellet.

Our EcoPure™ Technology works by expanding the molecular structure of the plastic, scissoring the polymer chain and adding in nutrients and other organic compounds, which weaken the polymer chain, This allows microbial action to colonize in and around the plastic. These microbes secrete acids, which enzymes break down the entire polymer chain. EcoPure™ will give you a biodegradable end product that will have indefinite shelf life, until it is placed into an active microbial environment.



Testing is done based on the ASTM D5511-02 Standard for the biodegradation of plastic materials in an Anaerobic Environment.

Scanning Electron Microscope Testing

From the University of New Mexico, Albuquerque, NM USA

SEM Photo's of PolyEthylene Breakdown

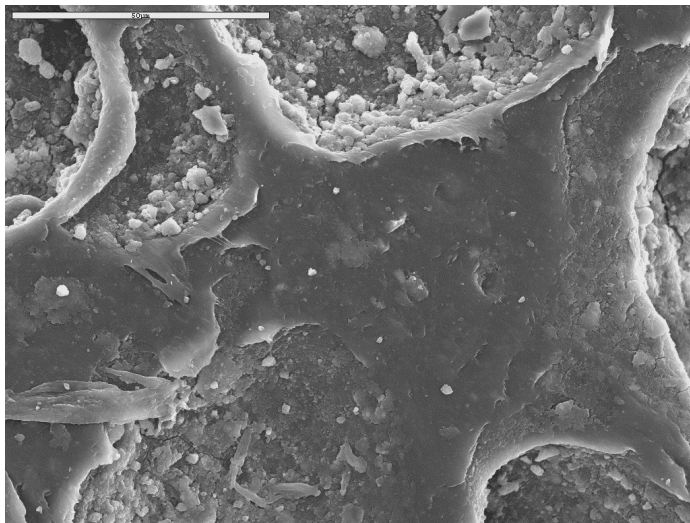


Photo 9. PE1T1KB. Pits are visible in the webbing between bubbles. Original magnification = 1000x. Scale bar = 50 μ m.

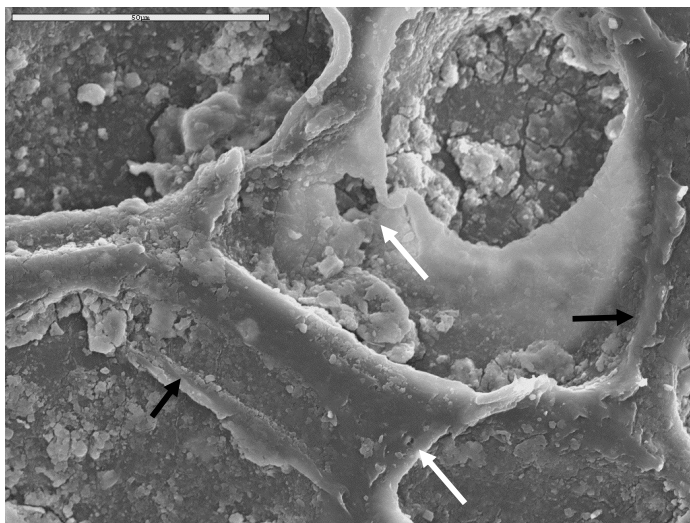


Photo 10. PE1T1K. At higher magnification, breakdown of the webbing between bubbles can be seen. Note remnant edges (black arrow) and numerous small pits (white arrows). Original magnification = 1000x. Scale bar = 50 μ m.

SEM Testing:

Test Method:

Placed into a highly active anaerobic environment for 7 months the pictures on the left show extreme biodegradation of PE.

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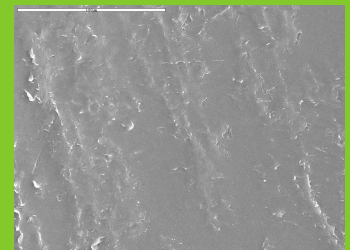


Photo 16. CBWC600. Medium magnification of surface of cleaned control in center of Photo 14. Original magnification = 600x. Scale bar = 100 μ m.

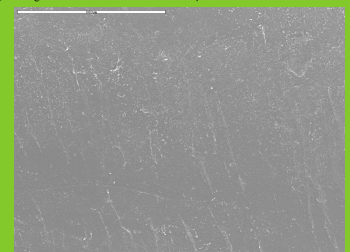


Photo 17. CBWC120. Low magnification image of another area of cleaned control sample, showing ridges. Original magnification = 120x. Scale bar = 500 μ m.