

Smarter Plastic. Cleaner Planet.

# ECO-ONE<sup>®</sup>

BIODEGRADABLE ADDITIVES

ICB

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# INTRODUCING : ECO-ONE®

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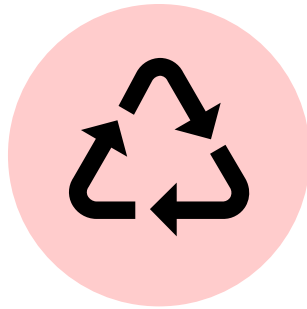
**ECO-ONE®** is an organic additive which enhances the biodegradation of plastic products in an active landfill.



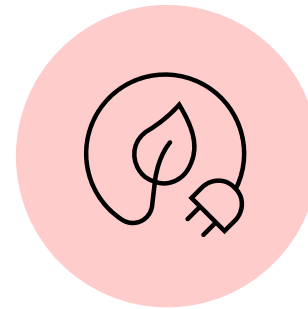
**100% Organic  
non-starch based**



**Biodegradation  
Enhanced**



**Recyclability  
Unaffected**



**Renewable Energy  
Source**



**Scientifically  
Verified**

Independent ASTM D5511 tests, representing biologically active landfills, have shown 5-15% biodegradation within 30 days.

ECO-ONE® is scientifically unique and validated for enhanced biodegradation.

# WHY ECO-ONE®

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## Easy Processing

ECO-ONE® is easy to use and will run under existing processing conditions.

## Cost Effective

Just add approximately 1% ECO-ONE® into your production process.

## Maintain Properties

Products manufactured with ECO-ONE® have the same physical properties and tensile strength as those manufactured without this additive.

## Environmentally Friendly

ECO-ONE® enhances the biodegradation of plastic into methane, carbon dioxide and inert humus (makes soil richer).

## Long Shelf Life

ECO-ONE® only starts to work in this active environment. These attributes will last until the product is discarded into a biologically active landfill.

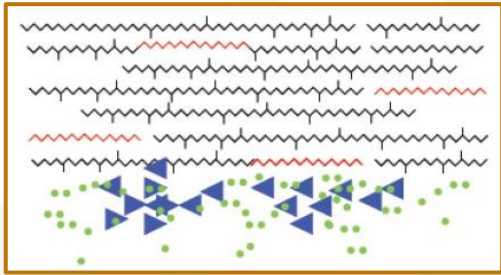


# HOW ECO-ONE® WORKS

01

## Formation

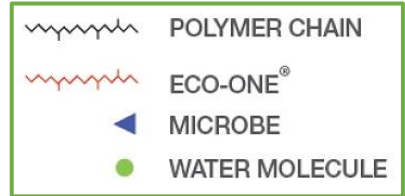
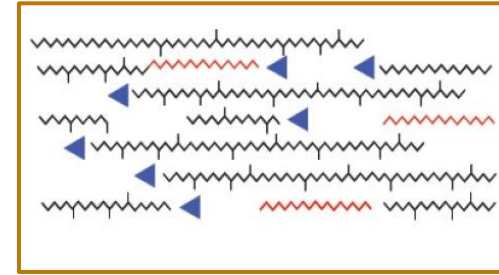
When placed in a landfill, ECO-ONE® attracts microbes and start colonizing on the surface of the plastic. As a result, a “bio-film” forms on and adheres to the surface of the plastic.



03

## Attraction

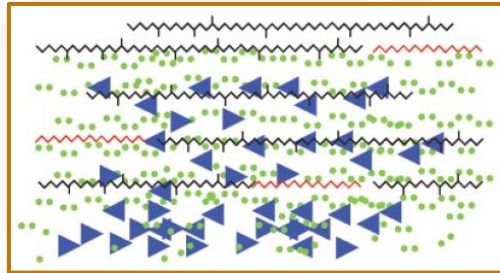
The microbes then send out “chemical signals” in order to attract additional microbes to the site.



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## Expansion

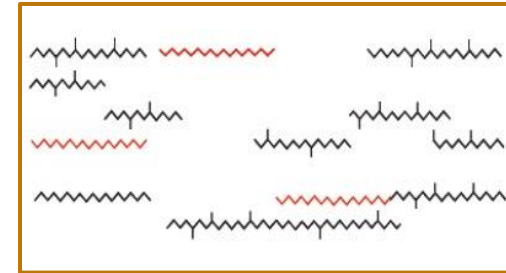
The bio-film then hydrolyze the plastic using enzymes and water. The enzymes render the plastic hydrophilic. Accumulation of water expands the polymer structure and gives the microbes access to the entire polymer structure.



04

## Breakdown

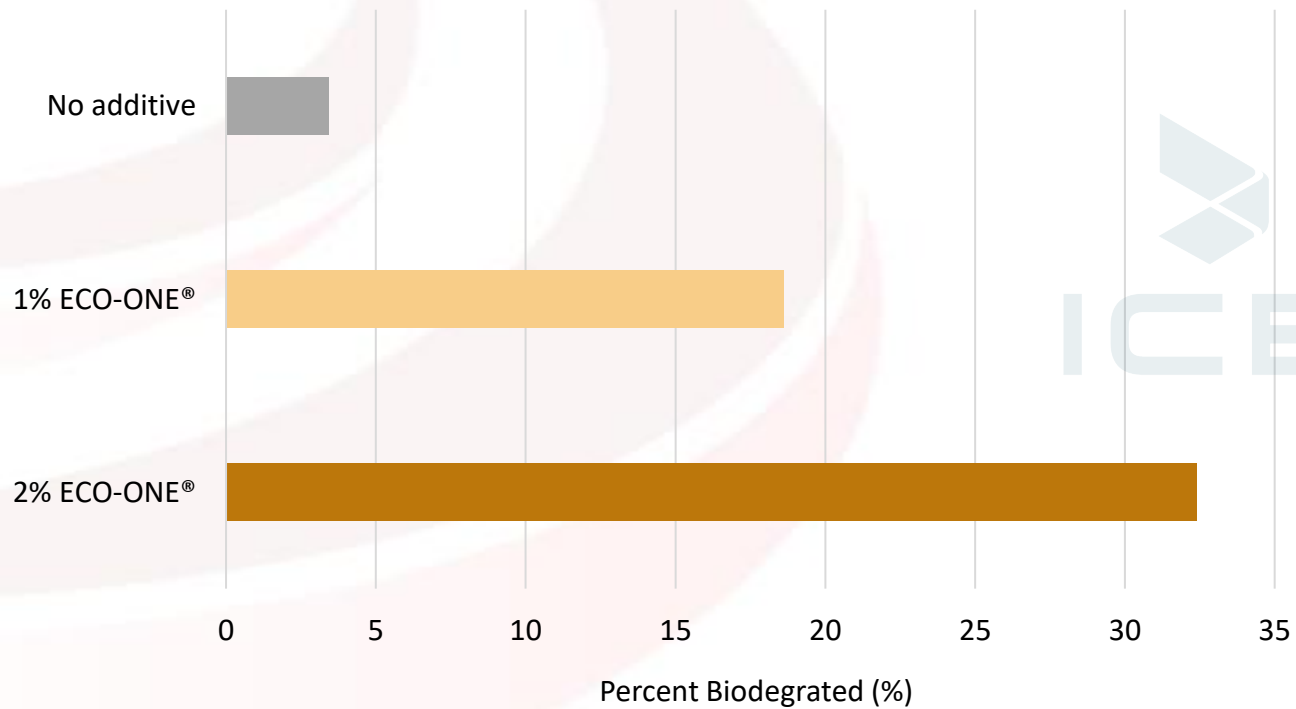
Once all the microbes have been assembled, they collectively feast on the polymer chains, thus breaking down the chemical bonds of the plastic product.



# BIODEGRADATION TEST

## Method : ASTM D5511

(Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials Under High-Solids Anaerobic-Digestion Conditions)



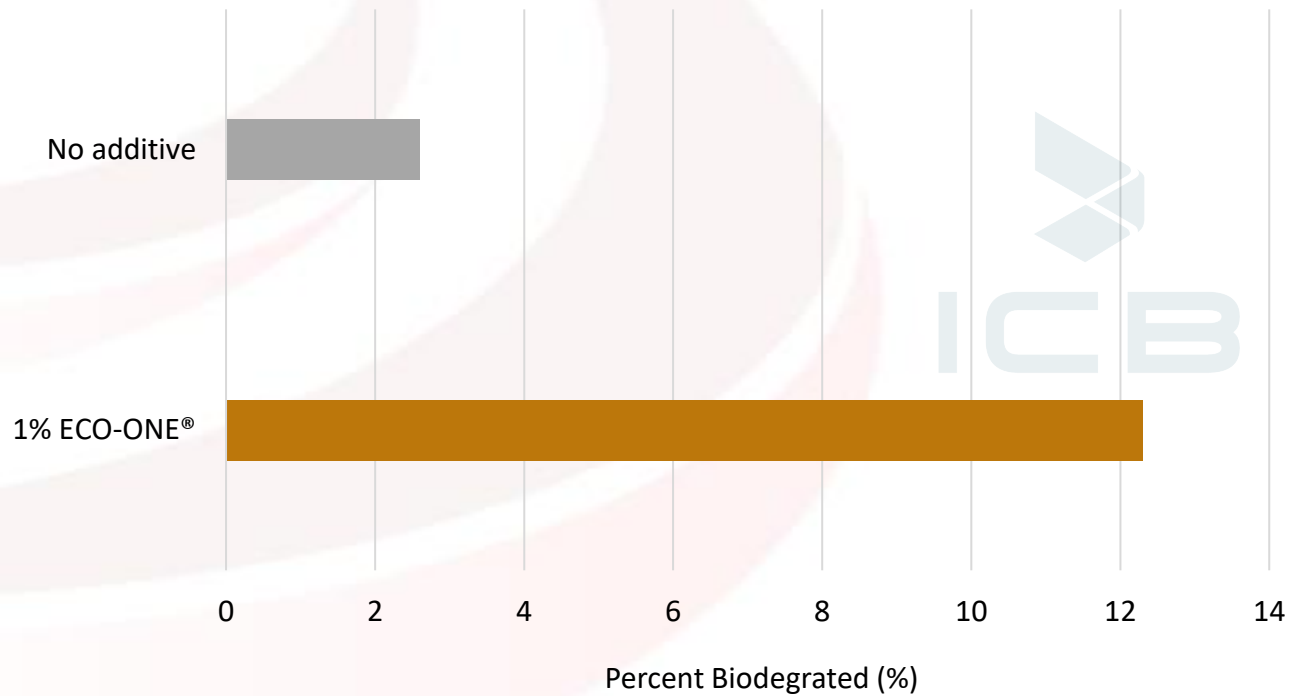
Sample : PE samples  
Test time : 120 days

Sample	Percent Biodegraded (%)
No additive	3.40
PE sample + 1% ECO-ONE®	18.60
PE sample + 2% ECO-ONE®	32.40

# BIODEGRADATION TEST

## Method : ASTM D5511

(Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials Under High-Solids Anaerobic-Digestion Conditions)



Sample : OPP films

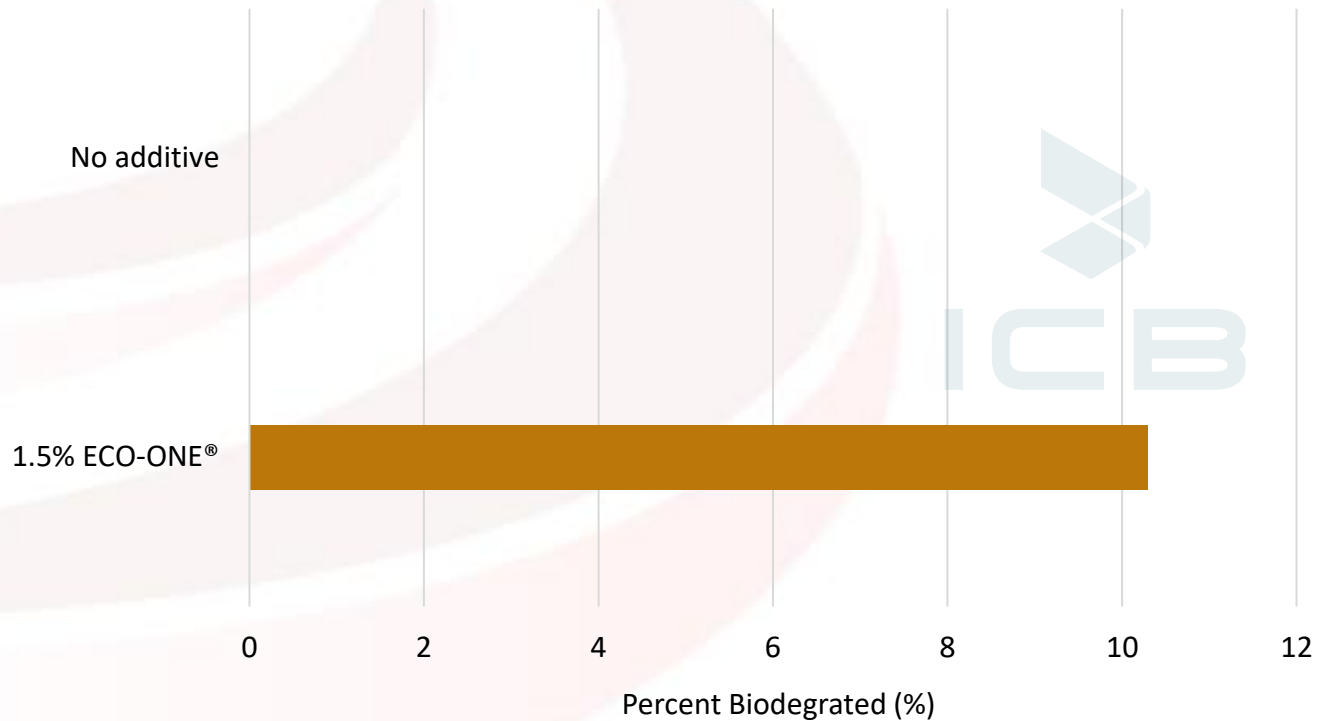
Test time : 198 days

Sample	Percent Biodegraded (%)
No additive	2.60
OPP films + 1% ECO-ONE®	12.30

# BIODEGRADATION TEST

## Method : ASTM D5511

(Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials Under High-Solids Anaerobic-Digestion Conditions)



Sample : PET cups

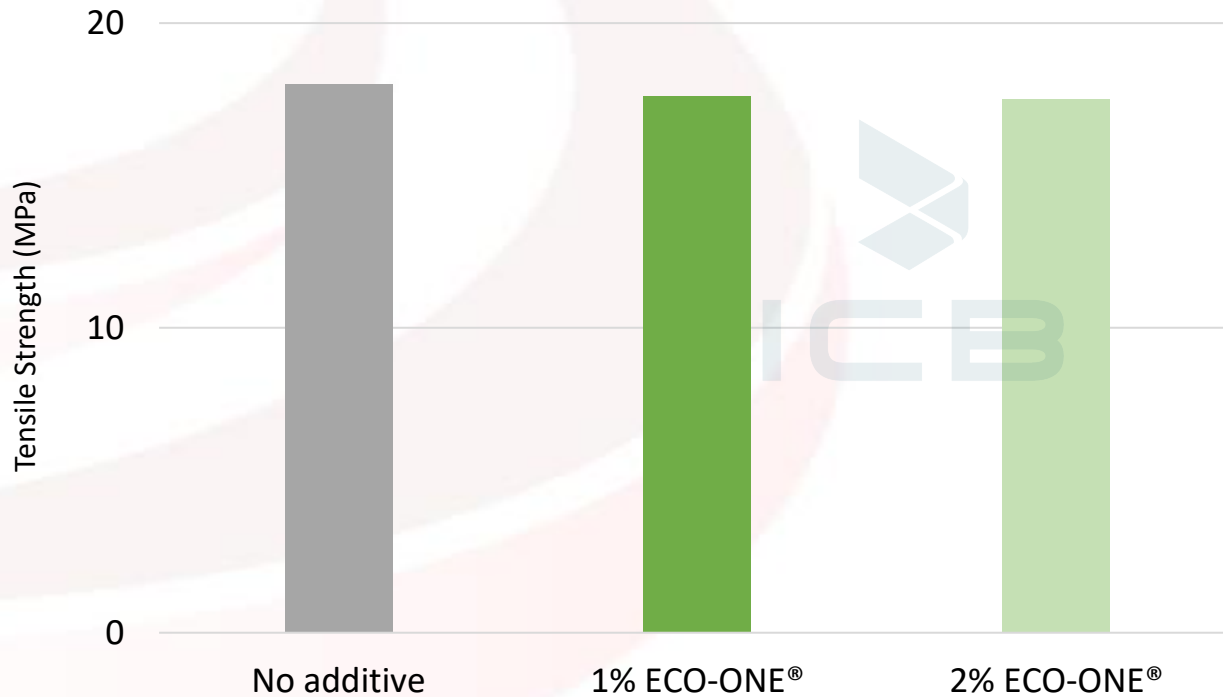
Test time : 80 days

Sample	Percent Biodegraded (%)
No additive	-7.50
PET cups + 1.5% ECO-ONE®	10.30

# MECHANICAL PROPERTIES TEST

## Method : ASTM D638

(Standard Test Method for Tensile Properties of Plastics)



Sample : LDPE films  
Film thickness : 50±10 microns

Sample	Tensile Strength (MPa)
No additive	17.98
LDPE films + 1% ECO-ONE®	17.62
LDPE films + 2% ECO-ONE®	17.51



# APPLICATIONS

- Food and Beverage Packaging
- Foams
- Bottles
- Films
- Fibers & Nets
- Footwear & Clothing
- Bags
- Houseware

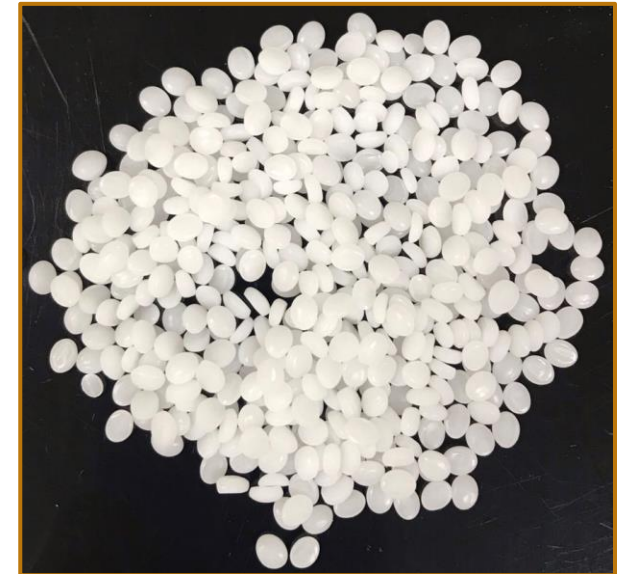


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# PRODUCTS

## ECO-ONE® Product grades and applications

Product Grade	Product Code	Polymer	Application	Applied Dosage
ECO-ONE® EG15	AEED22870	PE	Rigid Semi-rigid Flexible	1.0 – 5.0%
ECO-ONE® EG45	APED22871	PP	Rigid Semi-rigid Flexible	1.0 – 5.0%
ECO-ONE® EC84	ATED22872	PET	Rigid Semi-rigid Flexible Fiber	1.5 – 5.0%





# THANK YOU



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*Disclaimer : This information corresponds to the present state of our knowledge by working with our strategic additives suppliers.  
Any user for this product is responsible for determining the suitability of the product for the its particular purpose.*