

Degrade-Away™



100% DEGRADABLE



COLONIAL
BAG CORPORATION

1-800-445-7496 • www.colonialbag.com

Degrade-Away™ Liners are produced with our environment in mind



The Oxo-Degradable additive breaks down the long hydro-carbon bonds of the plastic reducing the film strength and eventually providing a nutrient source for microbes.



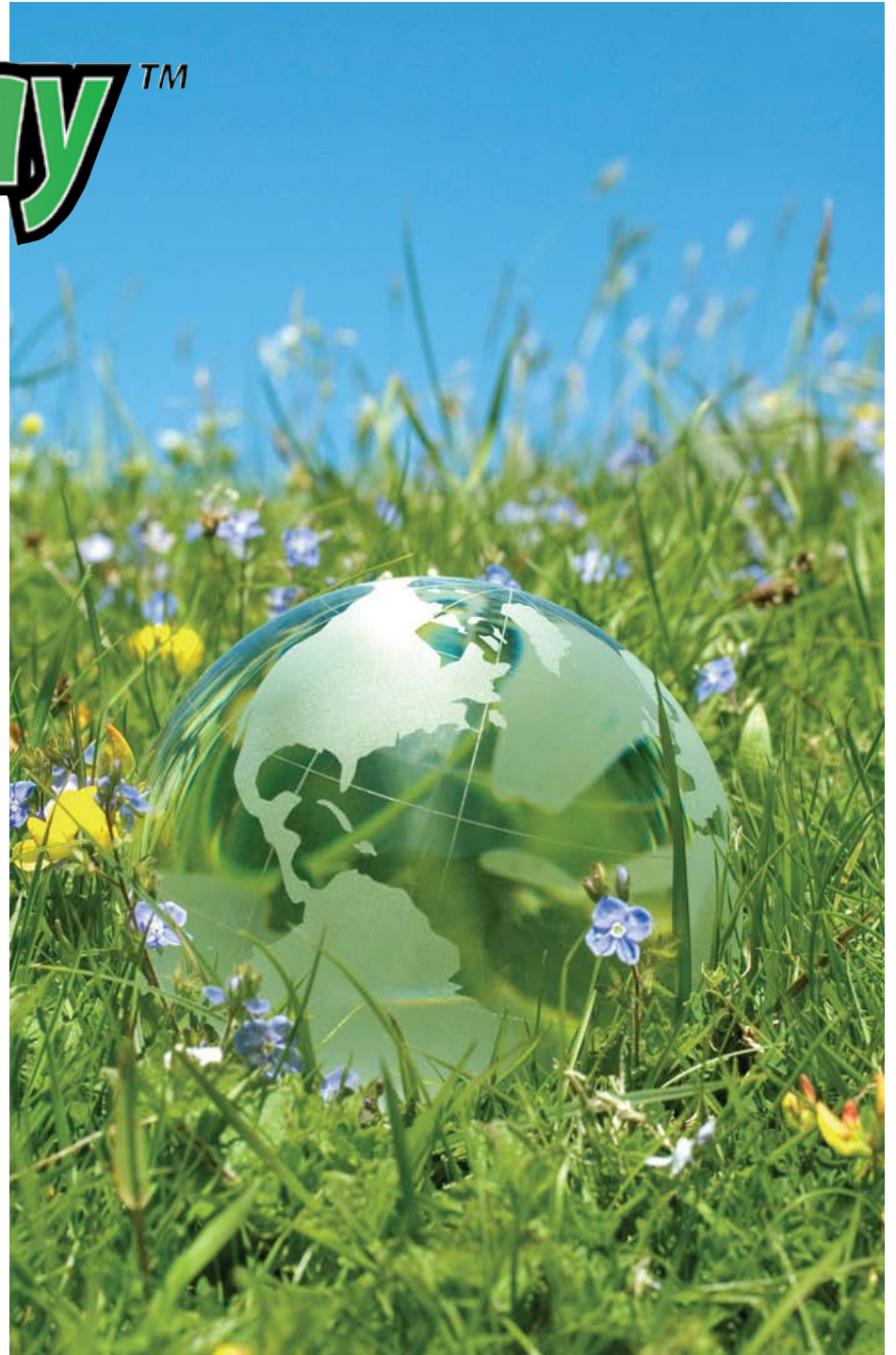
These microbes eat the broken down molecules reducing what was once plastic to water, carbon dioxide, and reusable biomass.



This process requires oxygen and can occur at the top layers of a landfill or in the presence of sunlight, heat or stress. Depending on conditions, this process can take between 2 months and 5 years.

Degrade-Away™

- Meets ASTM D6954-04 for Degradable Plastic
- Displaces 20% of polyethylene decreasing our reliance on petroleum and natural gas
- Reduces greenhouse gas emissions in the manufacturing process by 7%
- Generates significant power savings and increases manufacturing efficiency
- Two Year Shelf Life
- Available in High Density, Hi/Lo Blend, and Linear Low Density
- Custom Sizes and Colors Available



Blown Film 20% HM10-Max™

Real World Facts

This analysis based on 1 million pounds of LLDPE (polyethylene) processed per year, used in typical blown film application.

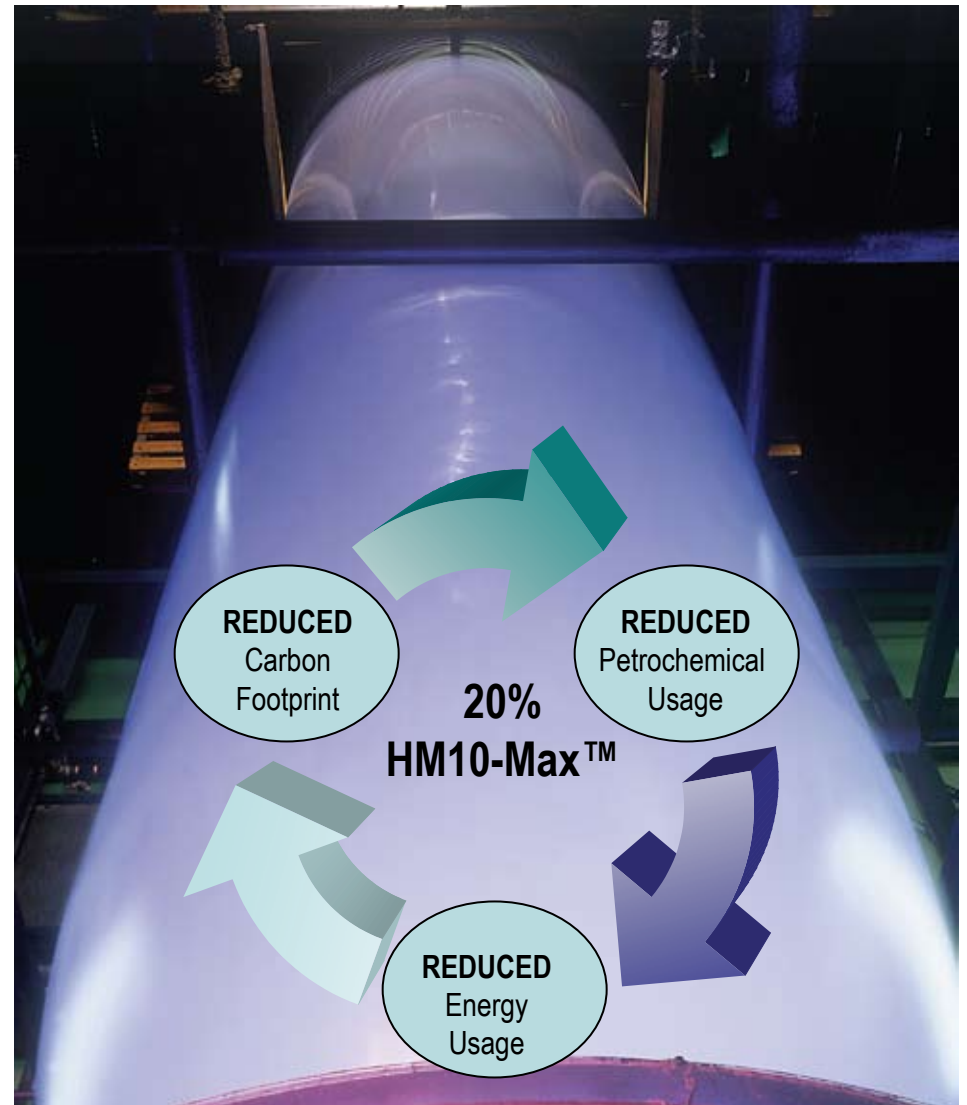
1 million pounds LLDPE (polyethylene)

200,000 pounds replaced with HM10-Max™

Taking 25 cars off the road for 1 year!

Burning 15,385 fewer gallons of gasoline!

Eliminating the need for 315 barrels of oil!



Go Green!

Degrade-Away™

100% Degradable Liners

CODE #	SIZE	GAUGE	COLOR	PACK	GALLON	MAX LOAD	CUBE
HIGH DENSITY – Meets Source Reduction Guidelines							
DA243308	24x33	8 mic	Green Tint	20/50's	15	15 lbs.	.38
DA303712	30x37	12 mic	Green Tint	10/25's	20-30	35 lbs.	.38
DA334512	33x45	12 mic	Green Tint	10/25's	32 Brute*	35 lbs.	.38
DA404816	40x48	16 mic	Green Tint	10/25's	40-45	60 lbs.	.54
DA434817	43x48	17 mic	Green Tint	10/20's	56	65 lbs.	.54
DA385817	38x58	17 mic	Green Tint	10/20's	60	65 lbs.	.54

HI/LO BLEND – Meets Source Reduction Guidelines

DA46XH	40x46	1.5 EQ	Black	100	40-45	75 lbs.	.38
DA46XXH	40x46	2.0 EQ	Black	100	40-45	125 lbs.	.54
DA58XH	38x58	1.5 EQ	Black	100	60	75 lbs.	.54
DA58XXH	38x58	2.0 EQ	Black	100	60	125 lbs.	.54

LINEAR LOW

DA2432H	24x32	.60 mil	Green Tint	20/25's	15	25 lbs.	.38
DA3036H	30x36	.60 mil	Green Tint	10/25's	20-30	35 lbs.	.38
DA3345X	33x45	.80 mil	Green Tint	10/15's	32 Brute*	45 lbs.	.38
DA4046XH	40x46	1.1 mil	Green Tint	10/10's	40-45	65 lbs.	.38
DA4347XH	43x47	1.1 mil	Green Tint	10/10's	56	65 lbs.	.38
DA3858XH	38x58	1.1 mil	Green Tint	10/10's	60	65 lbs.	.54

* "Brute" is a registered trademark of Rubbermaid Commercial Products, Inc.



FREQUENTLY ASKED QUESTIONS (FAQ'S)

1. What are the environmental benefits of using degradable bags?

Normal plastic degrades very, very slowly. As it was invented less than 100 years ago, we still don't know how long it might take to totally break down: possibly hundreds of years. That means that standard plastic bags take up space in precious landfill sites. Bio-degradation reduces the enormous waste volume from 100% down to 15% to 20% as the plastic is converted into CO₂, water and biomass.

2. What are degradable carrier bags made of?

Normal plastic bags are made from HDPE (high-density polyethylene), LDPE (low-density polyethylene), colouring and chalk. To make them degradable, all we have done is include trace amounts of a special additive. This additive causes the bags to oxidise, meaning that the structure of the plastic is attacked by oxygen causing it to disintegrate more rapidly (i.e. it acts as a catalyst, speeding up a process that happens extremely slowly naturally). Chalk (or calcium carbonate) is added as a modifier to the polyethylene during the film producing process in order to minimize the use of plastic, speed up the production process and improve the physical strength of the bag.

3. How does the additive work?

The system operates by thermo-oxidation, which means that once the additive is activated, the presence of oxygen causes the bag to disintegrate. Heat, sunlight and stress (i.e. movement) trigger and accelerate this process. If all four components are present — for instance a bag stuck in a tree being buffeted by the wind during summer — it can degrade in as little as 6 weeks. However, as long as there is oxygen, “thermal” degradation can occur at any temperature (even at less than 0°C, although it may take several years).

4. And if there isn't any oxygen?

The bag will not degrade. This is a big advantage over direct biodegradable materials that, in the absence of oxygen, begin anaerobic decomposition, the product of which is methane — a greenhouse gas 20 times more damaging than CO₂.

5. What exactly happens — and what is left — when the bag degrades?

The system we are using is a two step process: initially there is a chemical process where oxygen attacks the carbon chains in the HDPE, turning long chains into smaller and smaller chains which now incorporate oxygen in their chemical make-up. At this point, the plastic has been turned into organic functional groups (ketones, carboxylic acids, alcohols etc) which attract water. These transformations (smaller chains and the presence of oxygen and water) create the conditions for a potential second stage: microbial digestion. If micro organisms are present (as they will be in compost or landfill) then these small fragments will be included in their tropic chain, as food. These fragments therefore decompose further into simple elements: carbon dioxide, water and biomass (biomass is just the organic waste of microbe cells). This process is similar to the degradation of lignin in wood.

6. Are they, therefore, biodegradable?

If the conditions are right and microbes are present — such as in active landfill or in maintained compost — then, yes, the carbon chains do indeed biodegrade.

7. You say the process releases CO₂ but, as it is a greenhouse gas, isn't it bad for the environment?

CO₂ is unavoidable created in all natural breakdown processes. The alternative is to keep the carbon locked up as plastic but that means the bag lasts hundreds of years—potentially longer. CO₂ is an integral part of the photosynthetic process in plants, a by-product of which is O₂ or oxygen.

NOTES



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205 E. Fullerton Ave.
Carol Stream, IL 60188
Phone 630-690-3999
Fax 630-690-1571
Toll Free 800-445-7496