



Biodegradable Plastic Information Sheet

WHY OXOBIODEGRADABLE?

LANDFILL DISPOSAL

- Reduces landfill volume
- Reduces greenhouse gas effects
- Minimizes organic waste entombment
- Environmentally responsible
- Easy implementation / adoption
- Cost / performance / infrastructure

LITTER CONTROL

- Reduces plastic pollution
- Limits government intervention
- Non-toxic residues
- Reduced corporate branded litter
- Environmentally friendly
- Carbon retention in soil

TECHNOLOGICAL MERITS

- Scientifically substantiated
- FDA compliant applications
- Controlled product life
- Cost effective over alternatives
- Recyclable
- Compatibility: no re-tooling or productivity loss

TDPA[®] OxoBiodegradable plastic is available in our custom printed and stock retail bag programs.



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PRODUCTS INCORPORATING TDPA[®], TOTALLY DEGRADABLE PLASTIC ADDITIVES ARE DESIGNED WITH A CONTROLLED LIFETIME AND WHEN DISCARDED WILL DEGRADE

HOW DOES OXOBIODEGRADABILITY WORK?

1. TDPA[®] (Totally Degradable Plastic Additives) additives are blended into commodity PE, PP, PS resins during production to impart to the plastic special degradation properties without impacting productivity or product integrity.
2. After use, when the product is disposed of in landfills, compost sites, arable land or inadvertently as litter, these products undergo oxidative degradation much more rapidly than ordinary plastics
3. Mechanisms that trigger this process are heat input, sunlight (UV light) and mechanical stress.
4. For PE products in the presence of moisture, microorganisms, oxygen, and soil these products will ultimately biodegrade (per ASTM D6954-04)

ENVIRONMENTALLY FRIENDLY PLASTIC BAGS

Imagine the benefits of totally degradable plastic bags that:

- when disposed of in landfill sites or when unfortunately littered in the open, degrade into the end products of CO₂ and water (disappear) as opposed to remaining around for decades or more
- help reduce the build up of dangerous methane gases in landfill sites
- save valuable landfill space
- keep you ahead of both environmental legislation and public opinion

In today's "disposable" oriented society, thousands of tons of garbage are disposed of in landfill sites daily. A vast amount of today's plastic waste ends its life-cycle in a modern sanitary landfill where it stays for decades to come, leaving our children with an ever increasing mountain of plastic waste. Even worse, plastic disposed of as litter represents an eyesore and may cause sanitation and health problems in some environments.

Today's plastic is designed to last for many decades or longer. The life cycle of many plastic products, including shopping bags only require the product to have relatively short life spans. These products are not effectively recycled. Incorporating EPI's Totally Degradable Plastic Additives (TDPA[®]) into the regular production of shopping bags will cause the bags to completely degrade when subjected to sunlight, heat and / or mechanical stress over a pre-determined period of time.



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FREQUENTLY ASKED QUESTIONS

1. What is the difference between degradable and biodegradable plastics?

Degradable plastics are designed to undergo significant changes in chemical structure under specific environmental conditions, resulting in a loss of product integrity. Molecules are oxidized and break down into smaller molecules, and then the plastic disintegrates. Biodegradation occurs as a result of the action of naturally occurring microorganisms such as bacteria, fungi and algae as they consume the smaller plastic fragments.

2. What is OxoBiodegradation of a plastic?

OxoBiodegradation is a two-stage process in which, first the plastic is converted by reaction with oxygen in the air to molecular fragments that are water wetttable and second, these smaller oxidized molecules are biodegraded (converted into CO₂, H₂O and biomass).

3. What products can be made degradable?

EPI's primary focus is on short-term, single use products.

4. Can TDPA[®] - based degradable plastics be recycled?

Yes. Recycling in-plant material is entirely possible. Recycling post-consumer degradables is possible if they are based on TDPA[®] technology, and provided that degradation has not started.

5. What is the difference between EPI TDPA[®] technology and starch-based technology?

In specific PLA (Poly Lactic Acid) starch-based technology, the plastic is derived from plant starch. Though this sounds reasonable it has implications including:

- a. Use of fossil fuels to produce the product.
- b. Rapid release of CO₂ limiting humus production.
- c. High costs compared to commodity PE, PP and PS blended with TDPA[®]

6. What is the significance of ASTM D6954-04 as applied to OxoBiodegradable plastics?

ASTM D6954-04 formally recognizes the technology internationally. For single use throwaway plastic products it offers a controlled lifetime to items that are not being recycled yet, when discarded, will degrade.

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