



The Voice of Plastics Recycling®

Are all degradable plastics the same?

No. There are two distinct sets of materials involved in the degradable question. One set of degradable plastics are materials such as PLA (Polylactic Acid) that are unique plastics for which biological degradation potential is part of the nature of the plastic. The second set is materials of the standard #1 PET, #2 HDPE, #4 LDPE, #5 PP and #6 PS with special degradable additives included. The mechanisms for degradation vary with additive type.

Are bio-based plastics, PLA, and degradable plastics all the same thing?

No. PLA and other bio-based plastics are made from plant materials, often corn. Not all bio-based plastics are degradable. Some petroleum-based plastics can biodegrade. A degraded material is an opportunity lost to reuse a valuable resource.

Are degradable plastics recyclable with standard plastic? Why?

No. Kept clean and dry and separated, degradable plastics may be recycled successfully but they must be kept separate from standard plastics because they contaminate one another in the recycling stream. Degradable additives change the expectations for a plastic's future function. Bottles with degradable additives can be ground and melted like another bottle, but with reduced quality and service life expectations. APR Technical Consultant Dave Cornell notes that: "The degradable additive concept effectively renders the product using the additive non-recyclable. Many recycled plastics are used to make durable goods. Failure of these next-use products, such as carpets or piping, could range from distressing to tragic."

What does "reduced quality" mean?

Consider this scenario: A bottle with degradable additives makes it through the recycling collection stream and ends up in a bale of crushed PET bottles. The bale sits outside for a few weeks, and then goes through the normal grinding, washing, and pelletizing process of recycling. The recycled PET plastic is then made into strapping that holds bricks on a pallet. The pallet is stored outside for many months because bricks are insensitive to weather. Then the pallet is placed on the back of a truck heading down the highway. That's a lot of time, weather, and heat that could potentially trigger the degradable qualities of the plastic with additives present and cause that strapping to fail. The consequences could be very serious.

Will degradable bottles break down in a landfill?

Probably not. Some need a high-heat commercial composting operation to break down into single molecule level material. Some degradable additives are specifically stated not to work in landfills. Other additives are claimed to work only after years in the landfill.



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But some companies producing degradable additives for plastics claim that they are recyclable in today's collection methods.

According to APR President Steve Alexander: “These claims of recyclability are unfounded, untested, and possibly misleading as outlined by the Federal Trade Commission's Green Guide. No third-party testing data has confirmed these statements of recyclability. We urge companies claiming recyclability to share such supporting data with the recycling community.”

Won't degradable additives in plastics help the environment?

It is hard to see how that can be. Fragmenting plastics such as by oxo-degradable additives has few if any benefits and many potential problems. Degrading plastics to methane may sound good, but the capture rate of methane in landfills is such that the biodegradable additives will increase greenhouse gas emissions. Degradable additives are claimed to work in many resins. Testing does not confirm the claims. A degraded material is an opportunity lost to reuse a valuable resource by recycling. A degraded reputation is also a loss of resource.

What is APR doing to help make the issue easier for packaging engineers and design teams?

APR's Design® Guide for Plastics Recyclability is a powerful and robust resource for package design engineers at consumer brand companies and converters to create packaging that is fully compatible with plastics recycling systems in North America. The Design® Guide is continually evolving based on packaging trends.

What should I do?

Ask producers of bio-degradable and oxy-degradable plastics additives to prove that their material does what it claims and is safe to recycle. Ask for proof that carpets and geotextiles from recycled PET and highway culvert pipes from recycled HDPE will have their full expected service life if the degradable additives are present in the plastic. Ask if the appropriate APR test protocols have been met. If you are part of a university or industry setting where you can control purchases, work with recyclers to be sure that a material is recyclable before it is introduced for sale in your facility. Talk to your markets to be sure you know what they want and do not want in the bales of postconsumer plastics.