

End-of-life management considerations:

Because biodegradation is an end of life option that harnesses microorganisms present in the selected disposal environment, one must clearly identify the ‘disposal environment’ when discussing the biodegradability of a bio-based resin: examples include biodegradability under composting conditions, under soil conditions, under anaerobic conditions (anaerobic digestors, landfills), or marine conditions. Most bio-based resins used in packaging applications are designed to biodegrade in an industrial composting facility and one should require some type of certification or standard from material suppliers, ensuring compostability.

Unfortunately, little research has been done on how many industrial composting facilities exist in the United States and how bio-based plastic packaging impacts the integrity of the compost. However, the Sustainable Packaging Coalition did perform a survey of 40 composting facilities in the U.S., which provides some insight. According to their research, 36 of the 40 facilities surveyed accept compostable packaging. These facilities reported no negative impact of including bio-based plastic packaging in the compost. Of the 4 facilities that do not accept compostable packaging, 3 are taking certain packaging on a pilot basis and are considering accepting compostable packaging in the future. Of the facilities surveyed, 67.5% require some kind of certification of compostability i.e. ASTM, BPI, etc.

In addition, because value for composters is found in organic waste, I assume most facilities would not accept bio-based plastic packaging for non-food applications because the lack of associated food waste and therefore value. In other words, as Susan Thoman of Cedar Grove Composting articulated in her presentation at the spring SPC meeting, composters only want compostable food packaging because the associated food waste adds value to the compost whereas the compostable packaging has no value, positive or negative, to the integrity of the compost product.

It is also important to note that because there are so few industrial composting facilities available, the likelihood that your bio-based plastic packaging will find its way to its intended end of life management environment is rare. While the idea of biodegradation and compostability for plastic packaging may resonate with consumers, the industrial composting infrastructure is in its infancy and requires a considerable amount of investment in order to develop to the point where it would be an effective and economical option to manage plastic packaging waste post consumer.