

Abstract

Chemical Recycling of Polyester-based Products into Monomers

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Polyethylene terephthalate (PET), together with polyester, accounts for almost 50% of all plastic produced in the world. PET is found in a diverse range of applications, such as plastic bottles, food and beverage packaging, textiles and fabrics, and many more consumer and industrial items. 10% of the plastic waste generated in the world is PET and only perfect ones, such as clean beverage bottles, are currently being recycled at large scale. The rest of PET plastics end up incinerated, landfilled, or in our environment. DePoly has developed a process that converts unsorted, dirty, post-consumer PET plastic items into virgin grade raw materials. Thanks to DePoly's depolymerization technology, PET plastic is broken down to its monomers, purified terephthalic acid (PTA) and mono-ethylene glycol (MEG). This hydrolysis-based advanced recycling methodology has all the benefits of the virgin product without the production impact from fossil fuels. DePoly process involves green chemicals and there is no pre-washing, sorting, or separation needed. Moreover, in contrast to the harsh requirements of other hydrolysis methodologies, such as high temperatures and prolonged times, DePoly technology does not require any addition of heat or pressure. Our technology is very selective to process PET plastic even when it is mixed with other plastics like PE and PP. 100% recycled PET monomers can then be sold back to various industries to produce new virgin PET products.