

Choose Advanced Recycling as Your Next Source of Virgin Plastic Resin for Sustainable Packaging

A New Way to Recycle Plastics

Advanced Recycling is the emerging sustainable method to obtain ethylene molecules needed to produce polyethylene. Post-consumer waste and several other feedstocks (specific chemical ingredients) are used to generate identical ethylene molecules.



In addition, the Advanced Recycling process ensures that the resulting virgin resin is identical to virgin resin produced with fossil fuels, like oil and natural gas.

Like all virgin resins, resin produced through the Advanced Recycling process is free from foreign material and other contaminants.

One key benefit is that it offers a solution to transform difficult-to-recycle plastic waste into molecular feedstocks that create virgin plastics. These plastics include polyethylene, polypropylene, polystyrene, PET, and more.

The Chemical Structure

Resin manufacturers use fossil fuels to create the primary feedstocks for virgin plastic resin production. Chemical reactions convert these feedstocks into plastic resin.

For polyethylene production, the feedstock is a double hydrocarbon molecule called ethylene. Plastic resins are made of polymers: molecules containing many repeating hydrocarbon units.

CHEMICAL STRUCTURE of POLYETHYLENE PLASTIC

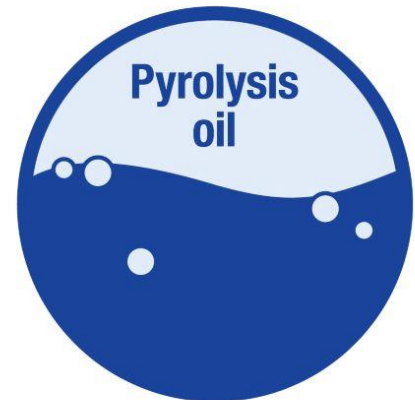


The plastic resin manufacturing process first subjects oil and natural gas feedstocks to “cracking” – a heat-intensive process which purifies ethane and changes it to ethylene. The ethylene is then subjected to chemical reactions that grow the number of carbon atoms until the correct length polyethylene polymer is formed.

Creating Pyrolysis Oil

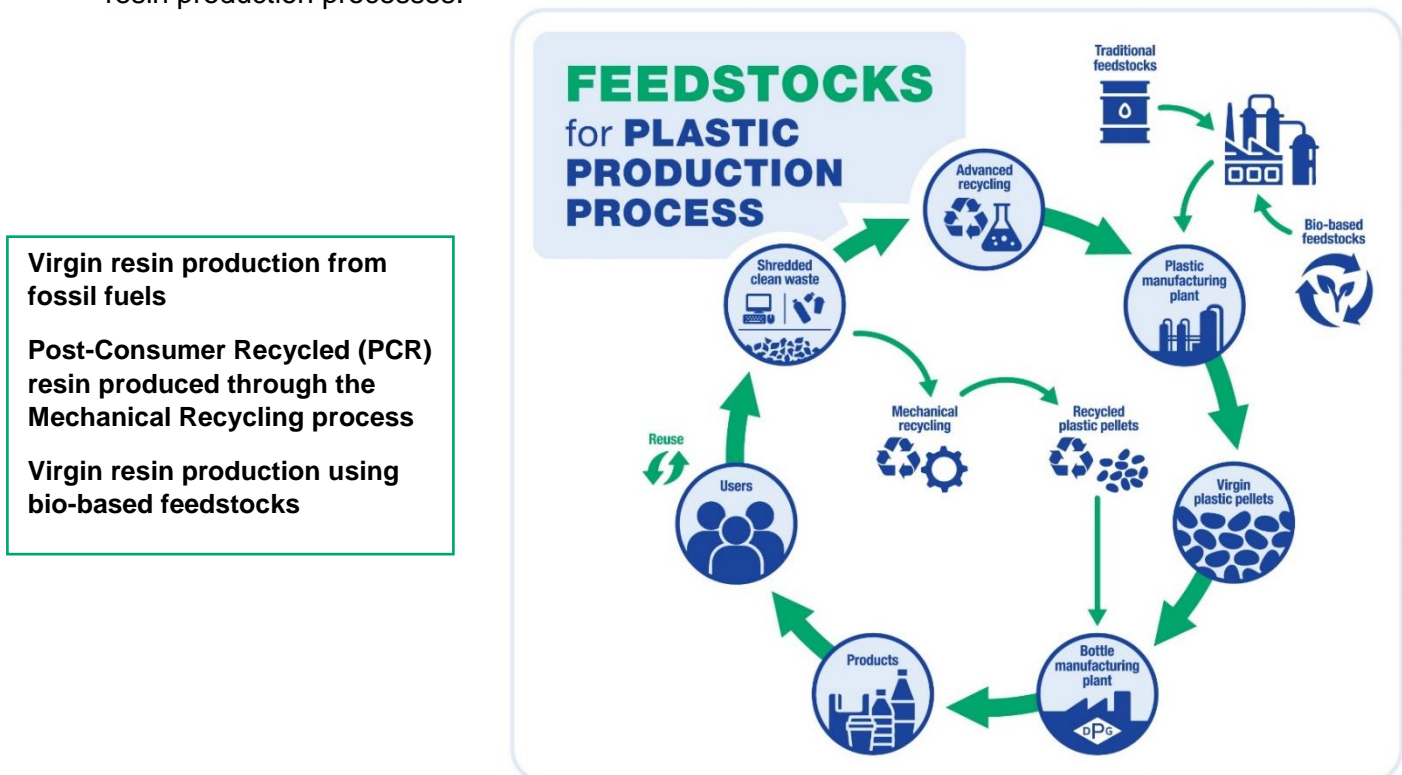
In the Advanced Recycling process, post-consumer plastic waste and biomass are heated in a non-combustible, oxygen-free pyrolysis process. The pyrolysis process is the key to obtaining ethylene molecules from post-consumer waste, creating pyrolysis oil.

Pyrolysis oil is processed through the same reactors as oil and natural gas, creating the same ethylene molecules. The ethylene molecules from all sources are used to create the virgin resin.



Resin Production Processes

This graphic shows the Advanced Recycling process as well as the other three polyethylene resin production processes:

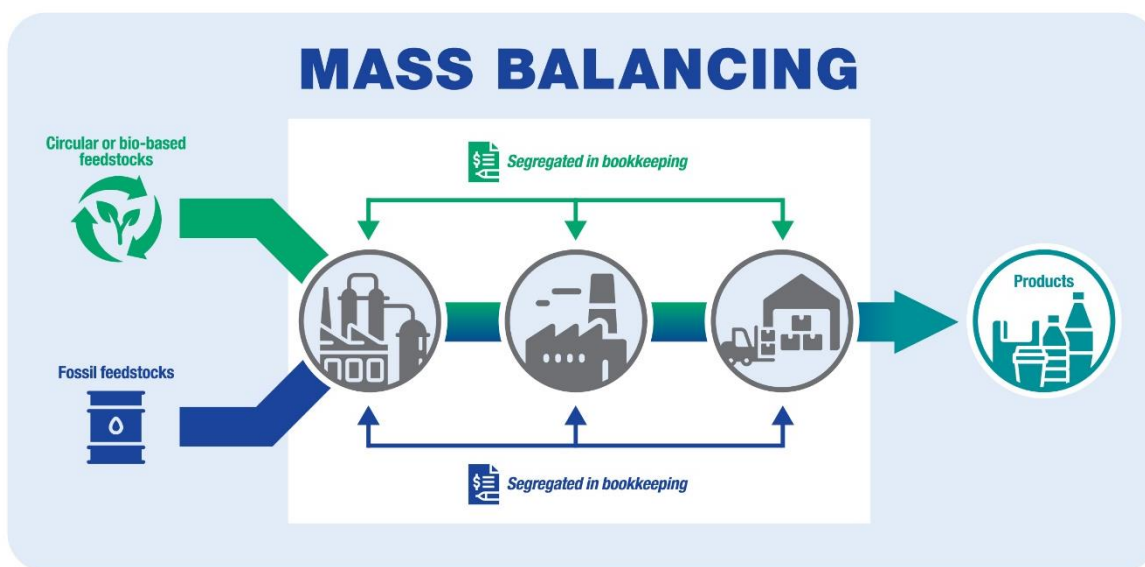


Advanced Recycling mixes ethylene molecules obtained from multiple feedstocks, producing virgin plastic resin. This process creates a Circular Economy. Resin made through Advanced Recycling is a continuous loop: plastic waste is processed repeatedly, without any reduction in physical properties. This is the definition of sustainable.

Mass Balancing for Feedstock Accounting

The ethylene molecules needed to create polyethylene can be obtained through multiple sources, like fossil fuels, plastic waste, and biomass. The amount of ethylene molecules derived from these sources can vary in each batch of polyethylene. Sustainably creating the majority of molecules in plastic resins through this Circular Economy is the goal.

Similar to the energy grid that utilizes sustainable power sources like solar, wind, and hydro, the Mass Balancing method allows Drug Plastics and our customers to purchase certificates. These certificates designate a specific amount of resin pounds supported by Advanced Recycling. In addition, customers can claim the use of recycled material for designated products up to the amount of certificate pounds purchased.



Certification

Several organizations are leading the effort to certify the amount of recycled and bio-based materials in the Mass Balancing model. One organization overseeing widespread global adoption is The ISCC System GmbH in Cologne, Germany. For each batch of resin sold, the resin purchaser receives a certificate of assurance and credits.

The Sustainability Declaration provided contains the circular or recycled content claim. The credits communicate how many pounds or metric tons of the resin produced using recycled or bio-based materials. This system serves the dual purpose of assuring resin producers provide accurate information, and validating the quantity of recycled and bio-based materials. Learn more about the International Sustainability and Carbon Certification at www.iscc-system.org.

For more information, contact your Account Representative.

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