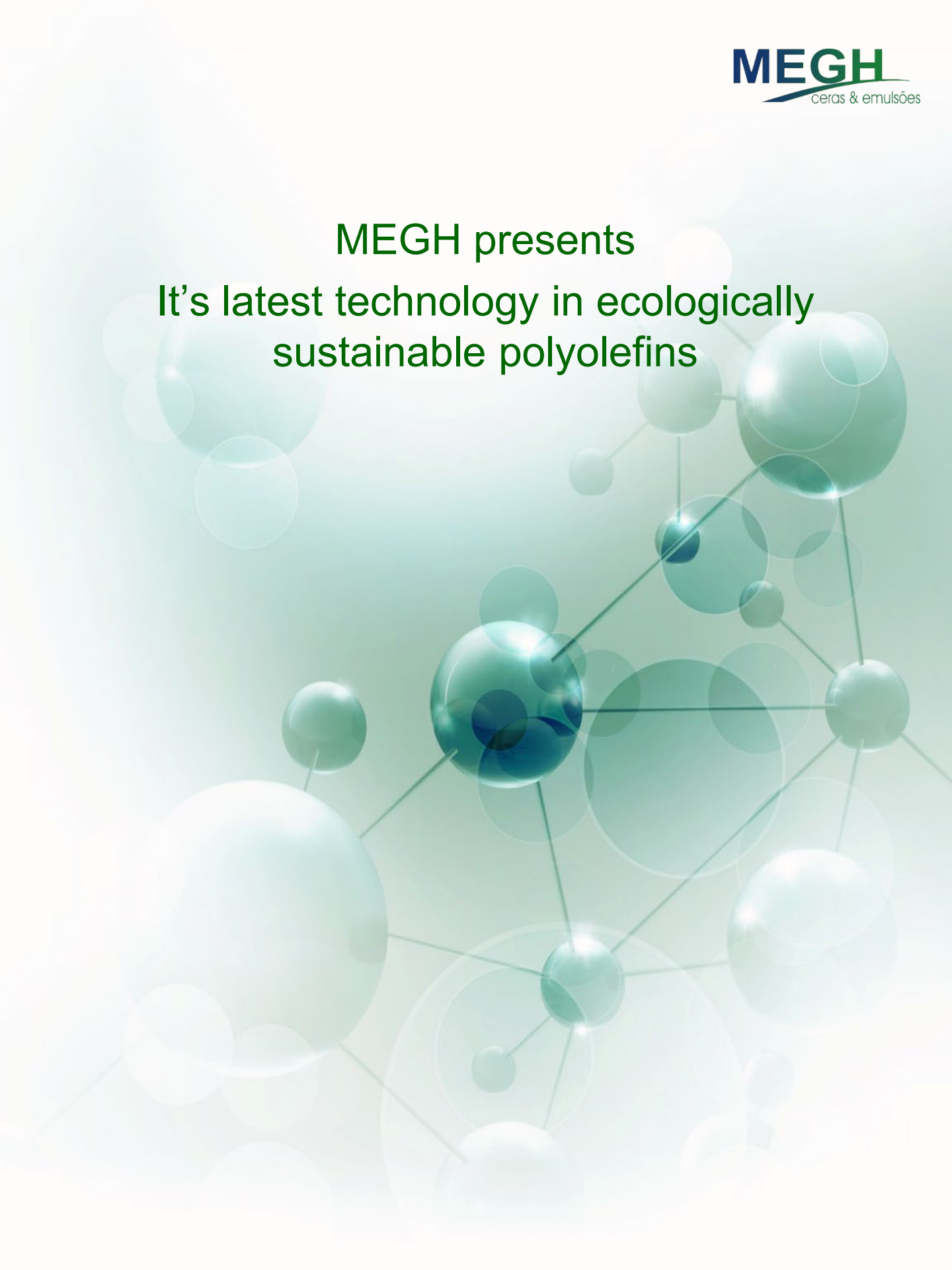


MEGH presents
It's latest technology in ecologically
sustainable polyolefins



Circular economy

The fundamental aim of circular economy is to reduce waste and residues to a minimum.

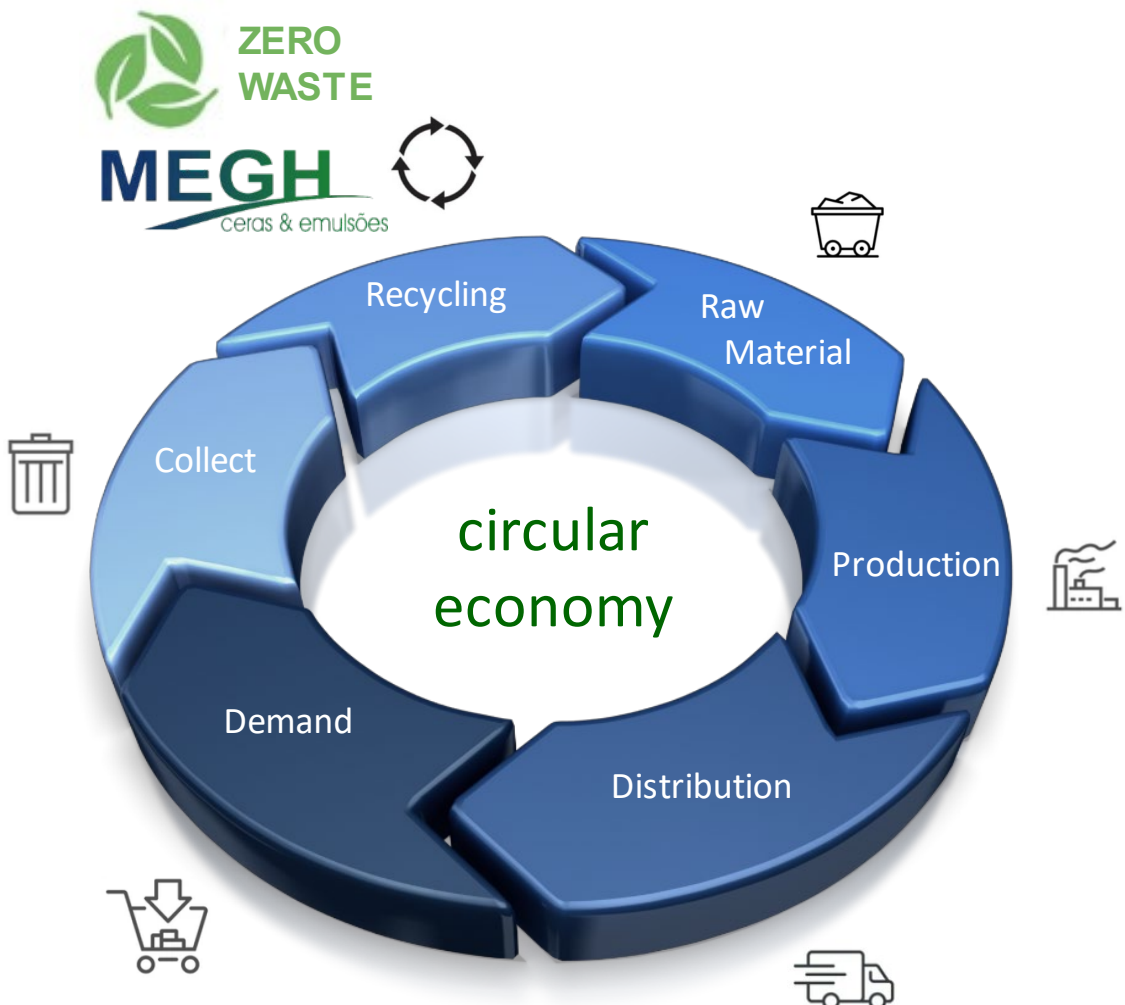
When a product reaches the end of its life cycle, its components are preserved within the economy, where feasible, through the practice of recycling.

This approach makes it possible to reuse materials, generating additional value for the entire production chain.

Chemical recycling

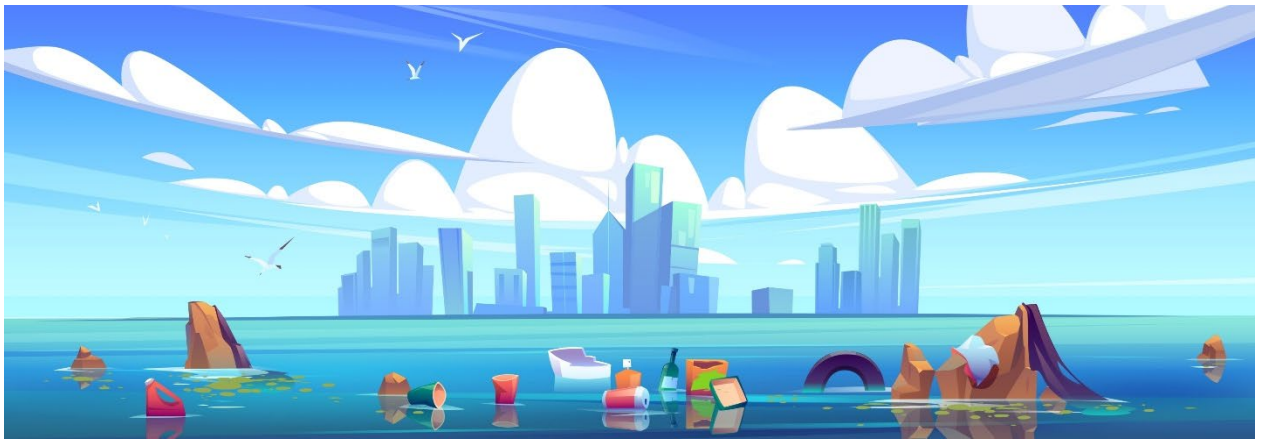
As part of the circular economy, MEGH processes plastic materials, transforming them into new chemical substances through a process of controlled catalytic depolymerization.

This enables a sustainable approach to the reuse of resources, contributing to a more efficient and conscious cycle.



Rethinking post-consumer plastics: A sustainable cycle

Post-consumer plastic emerges as the by-product of final products, such as plastic bags, which have ended their cycle as consumer items and are now relegated to solid waste. The approach to this reality adopts the acronym PCR, derived from the expression "Post-Consumer Recycled", which alludes to the resins generated through the recycling of plastic raw materials already used by consumers.



Around 85% of plastic packaging around the world ends up in landfill sites. In the United States, one of the largest global generators of PCR plastics, only 5% of the 50 million tons of plastic waste discarded by households has been recycled, according to some environmental NGOs.

Given the projection of a potential threefold increase in production by 2060, plastics, largely derived from oil and gas, are a considerable source of carbon pollution, intensifying climate change.

The significant volume of plastic waste deposited in landfills and the oceans has a detrimental impact on marine life and on the environmental balance as a whole.



Recycling

Recycling represents a circular and sustainable transformation route.

However, in the current circumstances, especially regarding polyethylene and polypropylene, their implementation is still at an early stage, with significant challenges to mitigate the growing plastics crisis.

In addition, a relevant point is that post-consumer plastic resin (PCR), which comes from the recycling of materials, faces obstacles when compared to virgin plastic in terms of cost.

This situation occurs when the value of virgin plastic is equal or even lower, which restricts the possibilities for recycled materials. This scenario establishes direct competition in the plastics transformation market between virgin resin and recycled material.



MEGH

With the pioneering technology developed by MEGH, recycled PE and PP plastics take a divergent path back to the original plastics processing market.

At MEGH, plastics are transformed into a new and innovative material: a synthetic wax, entering a completely new production chain.

Through this innovative technological approach, the new materials - synthetic waxes - gain the remarkable ability to biodegrade quickly in nature.

This regenerative cycle culminates in a complete renewal, guaranteeing total environmental compatibility.





Recycling and its stages

Recycling begins with sorting, where plastics are separated into categories:



After the initial sorting, each set of materials is sent to the recycling facilities.

Mechanical recycling

This approach, widely adopted for "post-consumer plastic" (PCR) materials, involves four distinct stages:

Fragmentation (grinding)

The waste goes through a mill that reduces its size.

Washing and sorting

The fragments, also known as "flakes", go through a washing process using water and are separated based on differences in density. The denser materials sink, while the less dense remain on the surface of the water.

Drying

The separated flakes are placed in large dryers, where they are carefully dehydrated by circulating hot air.

Extrusion

The dried flakes are fed into an extruder machine, where they are transformed into granules of recycled plastic material. These granules are then packaged and sent to the processing industry.

How long does a polyethylene resin take to degrade?

The controversial plastic bags made from LDPE may take up to 150 years to disintegrate.

However, once buried, this time is even longer, as microorganisms do not have the mechanisms to degrade them, which can extend this period in 100 to 400 years.

The challenge is compounded by the non-biodegradability of most plastic polymers, i.e. they don't break down easily.

PE recycling is considered to be one of the most complex of all plastic materials.



How long does a polypropylene resin take to degrade?

PP does not differ significantly from polyethylene when it comes to degradation.

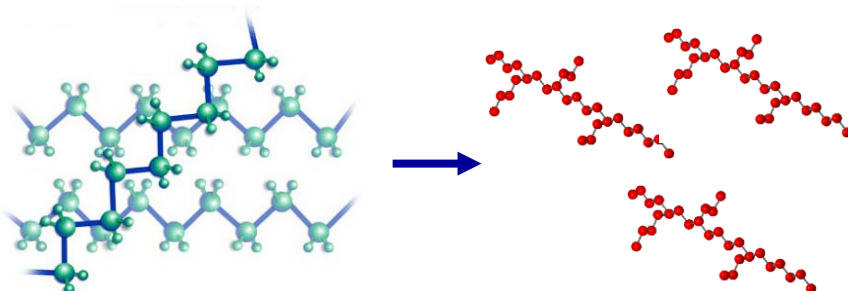
Due to its chemical structure, it is slightly more susceptible to degradation than polyethylene's, but this susceptibility is not enough to result in rapid decomposition in nature.

Current approaches to recycling LDPE, LLDPE, HDPE and PP are not very effective and generally produce materials with inferior properties.



What is MEGH's role in this process?

MEGH plays a key role in the processing of recycled materials.



MEGH's innovative approach offers an effective solution for reducing the carbon emissions and pollution associated with LDPE, LLDPE, HDPE and PP plastics.

By using these plastic wastes as a raw material, we transform them into a new, completely biodegradable material, thus contributing to a highly sustainable circular economy.

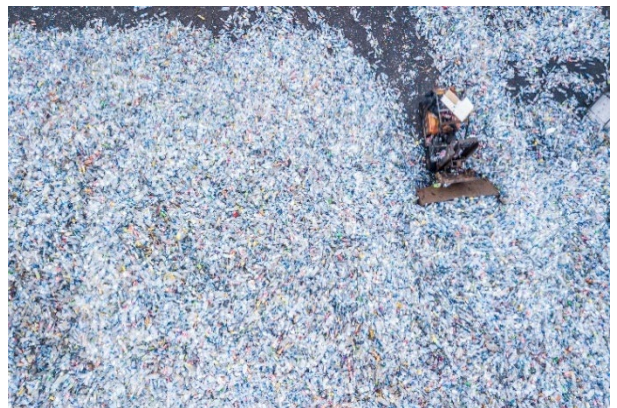
MEGH plays a key role in the recycling phase, adopting a sustainable approach that not only helps preserve the environment - our most valuable asset - but also paves a promising future for polyolefin recycling.

Our resins can be composed of up to 100% recycled material, showing our commitment to sustainability.

However, the most impactful aspect of this technology is the transformation of plastic resins. While in the traditional transformation chain recycled resins usually remain in nature for many years, the synthetic waxes produced by our technology degrade in a matter of days, achieving total biodegradability and demonstrating our commitment to a healthier environment.



Landfill



Selective waste collection – Recycling



MEGH Technology



Recyclable, biodegradable and renewable waxes



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