

# Recycling/Circular Product Lifecycle for Industrial Plastics



## Integrating Recycled Industrial Plastics at PolyFlex

Industrial plastics used in manufacturing components are designed and created for specialized purposes. Likewise, it takes specialized processes to recycle them. Small-to-mid-sized automated manufacturing facilities often do not have the resources to develop an in-house industrial plastics recycling program, which often prevents them from engaging in the circular product lifecycle.

At the end of product manufacturing utilizing industrial plastics, there is still value in the residual, original and left-over material, even though processing has degraded it to the point where it is no longer viable for use in the precision components often required in automated manufacturing operations. Reclaiming the usable portion of the production material and recycling it to be used again in your facility can reduce material costs and have a significant positive impact on the environment.

### PolyFlex Successfully Integrates Recycling Industrial Plastics into Manufacturing Programs

PolyFlex Products, a leading design, engineering and manufacturer of custom polymer solutions, is effectively managing the circular product lifecycle of industrial plastics. It has built a network of recycling partners to manage every step along the way from industrial plastics decommissioning to recycling to returning material investments back to production-ready levels.



PolyFlex engages in the circular product lifecycle with the industrial plastics it uses in its own product programs and automated manufacturing operations. Realizing the overall benefits in terms of material costs, reduction of product going to a landfill and the overall environmental benefits, PolyFlex started offering to help its customers with reclaiming and recycling their degraded industrial plastics. Some customers partner with PolyFlex to remove their obsolete plastics; others partner to participate in the full circular product lifecycle by sending PolyFlex their used industrial plastics to be recycled up to ASTM standards to reintroduce them into new product production.



## Recycling: Environmental and Bottom-line Benefits

Consider this example of recycling 90,000 lbs. of industrial plastics made from polypropylene, at 70% regrind (reclaimed plastics) and 30% virgin material added to raise the material up to ASTM standards:

- 39.7% reduction in greenhouse gas emissions
- 32.3% reduction in electricity consumption
- 56.3% reduction in petroleum use
- 100% reduction in landfill waste

## These environmental impact savings include:

- 76.76 tons of greenhouse gas emissions
- 260,696 Kwh of electricity
- 3,012 barrels of petroleum
- 1,935 cubic yards of landfill waste

Additionally, companies that engage in reclaiming and recycling their own industrial plastics can report it to their customers and shareholders as part of their corporate social responsibility initiatives. Many customers are dedicated to purchasing products that are manufactured with a commitment to environmental responsibility. In this way, participating in the circular product lifecycle also could be used as a marketing and sales tool.



**As part of initiating a circular product lifecycle program for recycling industrial plastics, PolyFlex considered the following:**

1. Collection and storage of decommissioned industrial plastics; factoring storing at an off-site location and transportation costs
2. Sorting designated material for recycling by type of plastic
3. Removal of non-plastic material on products slated for recycling: metals, rebar, metal handles and closures; labels affixed with industrial adhesives
4. Cleaning to remove built-up factory dirt and debris from production material
5. Cost and logistics: transporting used products to recycling facility; cost to have the material recycled for a return to automated manufacturing operations (if you choose to use your own recycled products)
6. Working with product engineering teams to calculate the proportions of recycled material (regrind) and virgin material needed to create a plastic material blend that is up to ASTM standards for its intended use

When your organization is contemplating launching a dedicated circular product lifecycle for industrial plastics, think of the following:

- Adopt a new attitude when dealing with expired industrial plastics that have outlived their usefulness at your facility. See them as a resource to recover some of your initial investment in materials and design. If recycled properly, they also can save you the cost of purchasing all new materials.
- Think backward: Design new industrial plastic products with the end-of-usability in mind. Think about the formulations of plastics that are strong enough for your applications and are reasonably easy to break down for recycling. Not all plastic is recyclable.
- Design new industrial plastic products that minimize the use of metal closures and reinforcements, and labels applied with industrial adhesives.

### Partnering with PolyFlex

PolyFlex has a clear understanding of the materials to be recycled, including a thorough knowledge of the varied material properties of industrial plastics (e.g., PP, TPU, etc.) and the material characteristics needed for the useful reclamation of recycled products.

PolyFlex has developed a robust circular product lifecycle recycling network and collaborates with regrind facilities that are in near proximity to its operations. It also applies a strict quality assurance protocol for the regrind material and the virgin material additives to assure that the industrial plastics made from recycled materials are up to ASTM standards. This is important for product and operational safety, as well as facility risk management.

Additionally, PolyFlex knows the importance of collaborating with all of your internal departments that have a stake in the circular product lifecycle: engineering, manufacturing, safety, purchasing and the sustainability team, to deliver the high-level results your organization requires.

### PolyFlex: Engineering a Solution for Industrial Plastics Recycling Challenges

PolyFlex is dedicated to maintaining a circular product lifecycle for industrial plastics, and it has comprehensive capabilities to help provide your organization with an industrial recycling solution that meets your specific needs, whether setting up your own program, providing production support utilizing recycled materials or delivering sustainable manufacturing in creating an industrial product lifecycle.

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