TRIGON PLASTICS

The Value of Separation

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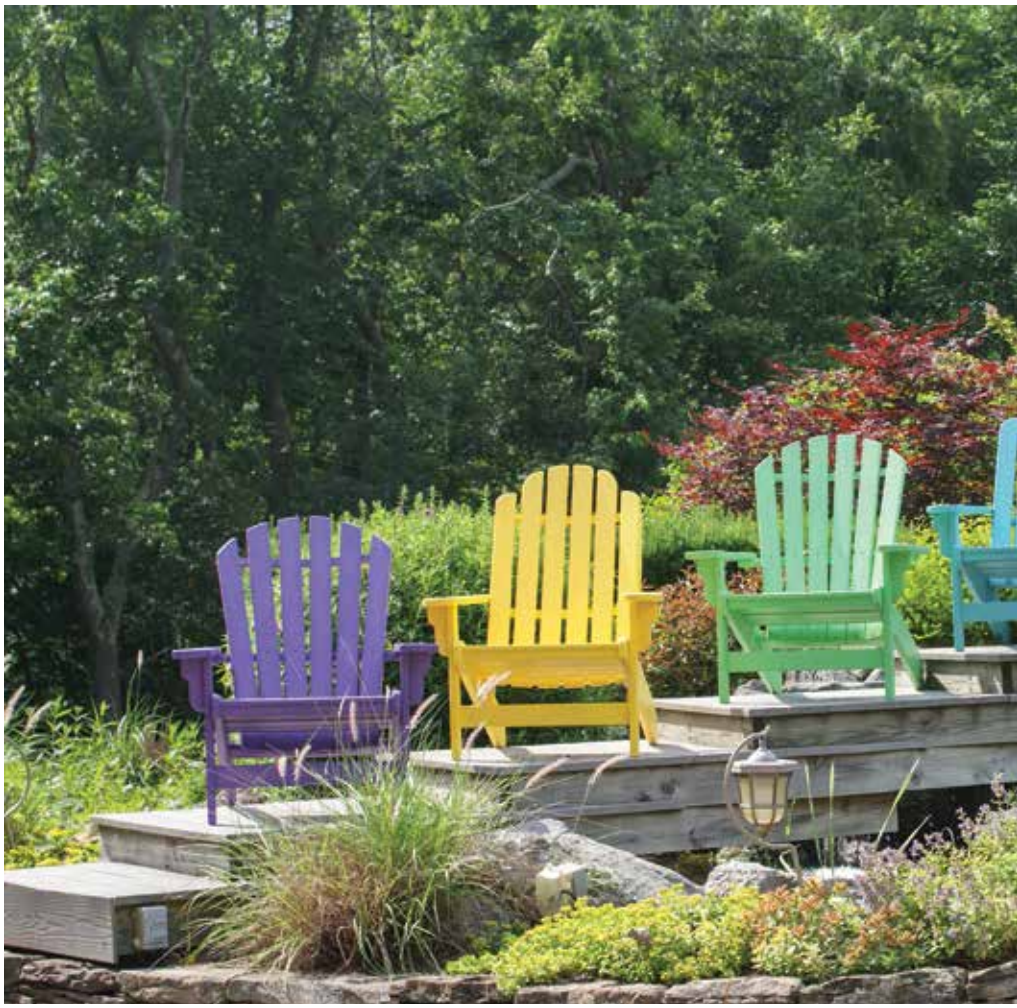
In the 1967 film classic *The Graduate*, Dustin Hoffman's character is told by a well-meaning, family friend that in thinking about the future he needs only to remember one word *"plastics."* Curiously, he uses the plural and not the singular. Perhaps the Hollywood writers knew more than we gave them credit.

In 1967, we still had not experienced the first oil shortages. Plastics, being a petroleum-based product, were cheap, plentiful and easy to manufacture. However over the ensuing years, we have had to come to grips with a finite supply of oil and with environmental restrictions on recovery and processing that necessarily lead to higher cost for all plastics.

Fortunately, most plastics lend themselves to a recycling process. Because of the market value of the raw material, plastics warrant recovery and reconstitution, even without considering the obvious environmental benefits. So although recycling plastics presents some challenges, a positive and profitable value can be gleaned from the process.

This is where Trigon Plastics, LLC in Newmanstown, PA focuses its efforts. Trigon had developed as a manufacturer of plastic furniture from product extruded from #2 plastic. Challenges and inconsistencies in



Unsorted bales of mixed plastics (above right) repurposed into beautifully vibrant adirondack chairs.

obtaining a steady source of materials lead Trigon into plastics recycling. Today its principel effort is on recycling plastics. Its sister company, Casual Living Products, manufactures the furniture. Trigon Plastics has discovered value and efficiencies in recovering and separating #1 through #7 plastics, and in baling and marketing the product they do not use.

In the recycling world plastics fall into 1 of 7 types:

1 POLYETHYLENE TEREPHTHALATE (PET OR PETE)
2-liter soda bottles, personal water bottle containers

2 HIGH DENSITY POLYETHYLENE (HDPE)
milk jugs, detergent bottles

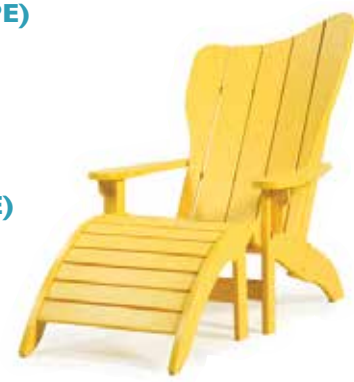
3 POLYVINYL CHLORIDE (PVC)
plastic piping, molded outdoor furniture

4 LOW DENSITY POLYETHYLENE (LDPE)
grocery store bags, dry cleaning wraps

5 POLYPROPYLENE (PP)
caps on bottles, food storage containers

6 POLYSTYRENE (PS)
styrofoam cups, take food containers, packaging peanuts

7 Other
A catchall category encompassing many plastics that are produced in low quantity.



Plastics encompass a wide range of organic compounds made principally of petrochemicals. Since each type of plastic has a different chemical structure and different valued characteristics, they must be separated from each other before the can be repurposed.

Each type of plastic has market value. The recycling challenge begins when, in the course of manufacturing a product from virgin materials, a few different types of plastic are incorporated into a single product, such as a PET (#1) water bottle being topped with a PP (#5) cap. The challenge becomes greater when many types of plastic are combined in curbside collection or industrial waste consolidation. Now we have *plastics*, plural, and the value of each is compromised by the whole.

Trigon Plastics uses its 50,000 square-foot facility in Newmanstown, PA to separate all plastics in order to restore the value of each. Trigon converts them into a usable feedstock material for manufacturers of new plastic items, and bales the mixed plastics.

An especially big challenge for the industry is controlling the incoming material. For example, municipalities, collectors and brokers are all subject to market forces. This means that incoming materials remain a moving target. Nick Jovich, Trigon's Materials Manager, spends time trying to track down and understand the different grades of material coming into the system. Knowing, for instance, that a particular collector or municipality typically has cleaner material is a clear benefit. Using a mix of material better suited to the separation processes insures a more profitable yield and a better end product.

The Process at Trigon

Plastics arrive at Trigon in various forms. Bales are loosened and broken apart to allow the optical scanners to identify primary types of plastic and sort and separate those to be further processed independently. It is at this stage that a surprisingly significant amount of, dirt, gravel, and metal are also culled from the plastic bales.

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Sustainability

Once the primary determination has been made the more rigorous uncoupling and sorting of plastic types begin. The primary parts are shredded into small pieces and further separated by floatation tanks and air separators. The further sorted plastic components are cleaned through a series of processes to remove, label, glues, and other fine detritus. Finally, a hot wash system is used to insure that the plastic is suitable for its intended new use.

High Density Polyethylene extrusion line.

Trigon Plastics focuses on separation and processing of primarily HDPE (#2), in clean dry flakes, pellets or profiled extrusions. Currently Trigon Plastics separates and bales both the PET (#1) and (#3 through #7) for resale. Once the plastics are resorted and restored to their primary type, they regain their original usefulness.

Much of the recovered HDPE (#2) is extruded at the Newmanstown facility and sold to Casual Living Products in New Holland, PA and is then used to create Breezesta® outdoor furniture. The addition of UV Stabilizers and colorants allows this product, formerly destined for the landfill, to be transformed into beautiful and functional, high end pieces of lawn art.

The functions and uses of products made from reclaimed plastics run the gamut from the lowly plastic bag to bumpers on mega yachts. The value stays with the plastic. The principle challenge in recouping the value of recyclables rests in our ability to process and separate the plastics. Trigon Plastics is continuously exploring and experimenting to find new and better ways to increase the quality and speed of plastic separation. ■

Natural color HDPE pellets.