

Optimizing Recycling: Post-Consumer Polyethylene in Building Products

BRIEF



A Collaboration between StopWaste and the Healthy Building Network
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By a wide margin, polyethylene is the world's most common plastic. This report considers three types of polyethylene: High Density Polyethylene (HDPE), Low Density Polyethylene (LDPE), and Linear Low Density Polyethylene (LLDPE). Collectively these plastics held a combined 35 percent share of all U.S. plastic resin sales in 2014. New polyethylene resins become packaging, food and beverage containers, and consumer products. When packaging and products are recycled, the polyethylene is often used in a variety of building products. However, because polyethylene can become contaminated during its use as containers, efforts must be made to prevent these feedstocks from introducing these contaminants into new building products.

Contaminants come from two main sources: polyethylene bottles and canisters absorb contaminants from the materials stored within them (cleaning fluids, etc.); and, additives that provide a specific function to the plastic during its initial use. For example, plastic compounders add biodegradation additives to films. The presence of biodegradation additives threatens the performance of future products manufactured with these recycled films (and they don't work). The recycling industry is developing testing protocols and baseline specifications for its feedstocks to screen out these residual contaminants.

Currently over one third of the polyethylene bottles and bags collected from the waste stream become new building materials. This report presents a set of recommendations to ensure that polyethylene feedstocks meet performance requirements and are screened for toxic contaminants, so that future building products - drainage pipes, plastic lumber, impact resistant walls, substrates, and table tops- are also free of these contaminants. Less contamination means more valuable recycled materials that manufacturers can use to make new products. These steps include:

1. Simplifying plastic packaging design and avoiding problematic additives such as degradation ingredients.
2. Growing capacity to collect and sort post-consumer polyethylene.
3. Investing in technologies to remove contaminants from post-consumer polyethylene.
4. Instituting product content requirements that replace virgin plastics with uncontaminated post-consumer polyethylene.

For further information, and to see our full report on post-consumer polyethylene, as well as reports on other recycled materials, visit <http://www.healthybuilding.net/content/optimize-recycling>.