



The promise of wood-plastic composites



Wood-plastic composites combine qualities uniquely suited to accommodating both consumer and producer preferences in the current market. They are a sustainable solution that makes use of organic material with virgin, recycled or renewable plastics. Wood-plastic composites can be customized at low cost and without the need for investment in new production equipment. The result is a cost-competitive product that offers a lighter environmental footprint, unique aesthetic appeal and superior performance.



A sustainable direction

Manufacturers have been combining petroleum-based plastics with organic material since the very early days of plastics manufacturing. Rice hulls, walnut shells and ground oyster shells were all used as affordable fillers that enabled manufacturers to cut costs while maintaining quality. Eventually, inorganic materials, such as chalk and calcium carbonate were substituted with the goal of making a more affordable plastic.

But there were downsides to using inorganic fillers. As more and more were added to the plastic, the finished product lost impact strength and became too rigid. For a time, adding filler to plastic was seen as a weakness and a mark of inferior quality.

Eventually, the focus began to shift from using inorganic fillers to again using organic material to supplement plastic production. Wood was introduced. Using sawdust and other waste materials from sawmills proved to be an affordable and sustainable tactic for making a plastic that was not only of high quality, but also visually appealing to consumers.

Wood-plastic composites feature the benefit of reduced melting temperature, resulting in lower energy costs for producers, and further reducing the product's environmental impact. Wood-plastic composites may often be used with existing tooling. For manufacturers, this eliminates an investment that would need to be recouped before cost savings could be realized. And since wood does not need to be treated when making wood-plastic composites, wood scrap could be used immediately after being reclaimed, without the addition of potentially harmful chemicals.

Today, the classic look of wood can be effectively imitated, but with the added benefits of improved strength, durability, and weatherability. As entrepreneurs and sustainability-minded businesses continue to enter the market, wood-plastic composites are emerging as a solution for a wide variety of consumer product applications.

A classic look

Wood and plastic each bring their own strengths to a composite material. Plastic enhances the strength and durability of the wood, and wood lends a look and feel to plastic that had always been lacking in older formulations. For example, in decking made from wood-plastic composites, the circumstances call for a tough material that can withstand assault from the elements. Simultaneously, there is an undeniable draw to the warmth and timelessness of wood.

Decking, however, only scratches the surface when it comes to uses for wood-plastic composites. Applications are limited only by the imaginations of the resourceful startups bringing new products to market.

By experimenting with the type and ratio of plastics blended with wood, different visual and tactile effects can be achieved. Different formulations are capable of yielding a variety of colors, more fibrous or smoother textures, more flexibility or more rigidity, as desired. Final products are capable of matching the aesthetic quality of balsa wood, recreating the texture of a dog bone or enhancing the smoothness of a child's toy.

These aesthetic qualities are achieved through variations in the type of wood fiber and particle size, as well as the type of recycled, reclaimed or virgin plastic used. Every product made of a wood-plastic composite has the potential to be unique. Modifications of the input materials are capable of producing a range of effects. The process can be adapted to achieve the specific aesthetic qualities demanded by the product.

An automotive manufacturer might seek to reproduce the warm, classic feel of wood in a car interior with a formulation that is both smooth to the touch and durable enough to maintain a premium brand image. A furniture manufacturer might recreate the classic craftsmanship of wood furniture, but do so in a sustainable fashion. Wood-plastic composites are ideally suited to serve a wide range of end goals particular to each manufacturer.

Beyond the backyard

Decking may have played the first prominent role for wood-plastic composites, but as we have seen, the versatility of these hybrid formulations goes far beyond the back patio. These composite materials are an effective stand-in for a wide range of products.

Wood-plastic composites are compatible with most plastic processing tooling and are far more efficient to produce compared to traditional woodworking. Most machinery capable of molding conventional plastics can also mold wood-plastic composites. Colors can be embedded in the plastic itself, removing the need to paint finished products. This eliminates toxicity concerns that may otherwise come with toys designed for infants or pets.

Recently, a large toy manufacturer investigated prospects for improving their margins on a popular classic toy. They selected a wood-plastic composite alternative. The company began injection molding a wood-plastic composite instead of shaping wooden pieces, bypassing one of the most expensive steps in their manufacturing process. Also, because color could be added during the molding process, the parts did not need to be painted. This eliminated the concerns of peeling or chipping paint.

When a world-renowned designer sought to make a chair from repurposed waste materials, he turned to a wood-plastic composite made with recycled plastic. From this, he created beautiful, high quality furniture from materials that would otherwise have been discarded.

An international pet products company turned to a wood-plastic composite to create a pet toy that combined the pleasing smell of wood with the safety and durability of plastic. Dogs loved the smell of wood and their owners appreciated a safer toy that would not splinter and even floated.

And, when a leading lawn and garden company wanted to make a more natural garden edging border as an alternative to traditional plastic edging, they found that wood-plastic composites provided a solution that was cost-competitive, looked better and lasted longer.

Wood-plastic composites are the fastest growing plastic additive. New uses for wood-based composites are constantly being realized. From car speakers and interiors to home furniture and kitchen accessories, these hybrid materials are providing sustainability, longevity and cost savings in new consumer sectors everyday. They will almost certainly continue to emerge as solutions to new product development challenges for the foreseeable future.

Why Green Dot?

At Green Dot, we specialize in formulating our wood-plastic composites pellets so that they are ready to achieve our client's needs. We work closely with clients to achieve the desired aesthetic and material ratios needed to yield success, developing a specific wood-plastic composite that meets your exact color and texture requirements.

Green Dot's pellets are optimized for injection molding. Unlike most wood-plastic composite pellets, Green Dot offers pellets that are smaller and more uniform in size, assuring better conveyance, less waste and greater consistency in your manufacturing process. As experts in the creation of custom composites, we make sure our materials work with your current manufacturing process and that the final result meets expectations.

Additives are not simply filler when you work with Green Dot. They bring tangible benefits to both your product and the planet.



527 Commercial Street
Suite 310
Emporia, Kansas
66801 USA

Email: info@greendotbioplastics.com

Phone: 620-273-8919