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## **Thermoset Molding for *Automotive Applications***

As an ISO/TS 16949:2009 & ISO 9001:2008 certified custom thermoset molder; Woodland Plastics offers extensive thermoset molding services and expertise to OEMs and their suppliers in the automotive industry. With excellent *Performance & Durability* characteristics, *Lightweighting* options, & *Cost Advantages*; components molded from thermoset materials such as Phenolics & Bulk Molding Compounds (BMCs) are widely used in a variety of performance and aesthetic-based automotive applications.

### **Performance & Durability**

Due to the nature of application, many automotive components require certain heat resistance specifications to combat high operating temperatures. With heat stability up to 500F+, molded thermosets offer excellent performance towards powertrain and under-the-hood applications without incurring high material costs of similarly-performing advanced thermoplastics, such as PPS, Torlon, and CFRPs (Carbon Fiber Reinforced Polymers) like PEEK or PAEK.

In addition to thermal stability, thermoset components provide excellent performance against corrosion and their properties are not affected by automotive fluids such as oils, fuel, engine cleaners, transmission fluid, brake fluid, and power steering fluids. With a product life cycle potentially spanning up to two decades, automobiles require components that will not disfigure or disintegrate. Because of excellent dimensional & chemical stability, thermoset components are able to remain durable throughout the life of the product, even when exposed to rapidly changing environments and climates.





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### **Lightweighting Advantages**

One of the biggest advantages of implementing thermosets into an automotive application is doing more with less. With a high strength-to-weight ratio, thermosets offer a lightweight, low cost option over metal counterparts with much better dimensional & chemical stability compared to most engineered thermoplastics.

As automakers and other industries continue lightweighting efforts for both cost savings and compliance requirements, thermoset composites have become a staple for metal-to-plastic (or metal-to-thermoset) conversions for automotive OEMs & suppliers looking to reduce weight and mass of a component assembly without sacrificing performance. Incorporating thermosets into a product design also offers the ability to consolidate multiple parts of an assembly, further reducing the weight and costs of the product.



### **Cost Advantages**

One of, if not the most important variables for any product application is the overall manufacturing costs it takes to bring a product to market. Automotive OEMs and suppliers must offer the best performing product at a competitive price in order to maximize market share. With unrivaled dimensional & chemical stability at its price point, thermoset materials provide excellent cost savings for automotive applications over similarly-performing metal or advanced thermoplastics such as PPS and CFRP (Carbon Fiber Reinforced Polymers).

Incorporating thermosets into a product design also allows for part consolidation, limiting the total number of components in an assembly while simultaneously reducing weight and mass of a product assembly. With excellent mold-ability, thermoset components do not require costly secondary operations such as machining or finishing that a metal component may require. Additionally, the molds to produce thermoset parts have a longer life span and lower capital costs vs tooling to produce metal parts. A conventional thermoset mold with hardened steel may last up to one million cycles.