

Thermoset Molding for *Electrical & Lighting Applications*

Woodland Plastics Corporation offers extensive thermoset molding expertise and services to various OEMs and suppliers in the Electrical and Lighting industries. With an excellent blend of *Electrical Performance, Durability, & Cost Effectiveness*; components molded from thermoset materials such as Bulk Molding Compounds (BMCs), Phenolic resins, Epoxies, & DAPs are used in a wide variety of electrical & lighting applications.

Electrical Performance

Due to a range of rapidly changing environments, electrical & lighting applications must offer excellent electrical performance characteristics to resist physical and chemical degradation. Utilizing molded thermosets in your product design may provide the following electrical characteristics:

High Dielectric Strength – Electrical & lighting components must withstand a certain amount of electrical voltage before breaking down.

Electrical Insulation – Power transmission & low voltage insulators must resist the flow of electrical charges or currents to prevent physical and chemical deterioration of the parts.



Thermal Shock Resistance – Electrical motor components may require stability to withstand rapid changes in temperature.

Electrical Conductivity – Heat sinks applications require conductive materials in which heat transfers through a material or component easily and/or freely.

UL Flammability Rating – Many components or assemblies must be UL approved for flammability, such as V-0, HB, or 5-V safety standards.

UV Resistance to LEDs and/or Sunlight – In outdoor or LED lighting applications, components must remain dimensionally & chemically stable when exposed to UV from LED bulbs or sunlight.

Durability

While electrical & lighting components must offer excellent electrical characteristics based on the application, products and assemblies must also continue to remain dimensionally & chemically stable throughout the life of the product. While some materials will eventually degrade or deteriorate in harsh environments, thermoset components provide excellent durability characteristics, including:

Corrosion Resistance – While metals will eventually corrode with exposure to moisture, thermoset components offer excellent corrosion resistance.

Dimensional Stability – Electrical terminal blocks must remain dimensionally stable within high temperatures and strong electrical currents.



Encapsulation/Sealing – Electrical housings require superior sealing or encapsulation to prevent moisture absorption.

Humidity Resistance – Outdoor lighting applications may be exposed to high humidity throughout the life of the product, which can deteriorate electrical insulation properties.

High Strength – Electrical motor assemblies must include components that are strong enough to handle high mechanical loads.

Low CTE – Circuit breakers & assemblies require a low coefficient of thermal expansion (CTE) to resist changes in shape, area, & volume when exposed to cycling or rapid temperatures.



Cost Effectiveness & Design

Aside from offering superior electrical performance & durability characteristics over other materials, molded thermoset components also provide great cost & design advantages over metals or engineered thermoplastics, including:

Mold-ability – Due to excellent mold-ability, thermoset molded parts & components may be molded from intricate designs.

Part Consolidation – Consolidate the number of parts in an assembly with thermoset injection molding.

High Yield – Components injection molded provide a much higher product yield than producing metal counterparts, resulting in faster lead time to market.

Lower Weight – Reduce the weight of a component assembly by switching from metal to thermoset.

Reduced Secondary Machining – Reduce or eliminate secondary machining operations by utilizing tight tolerances from molding.

Low Shrink & Creep – Thermoset components offer a much lower shrink and higher creep resistance properties when comparing with engineered thermoplastic components.

