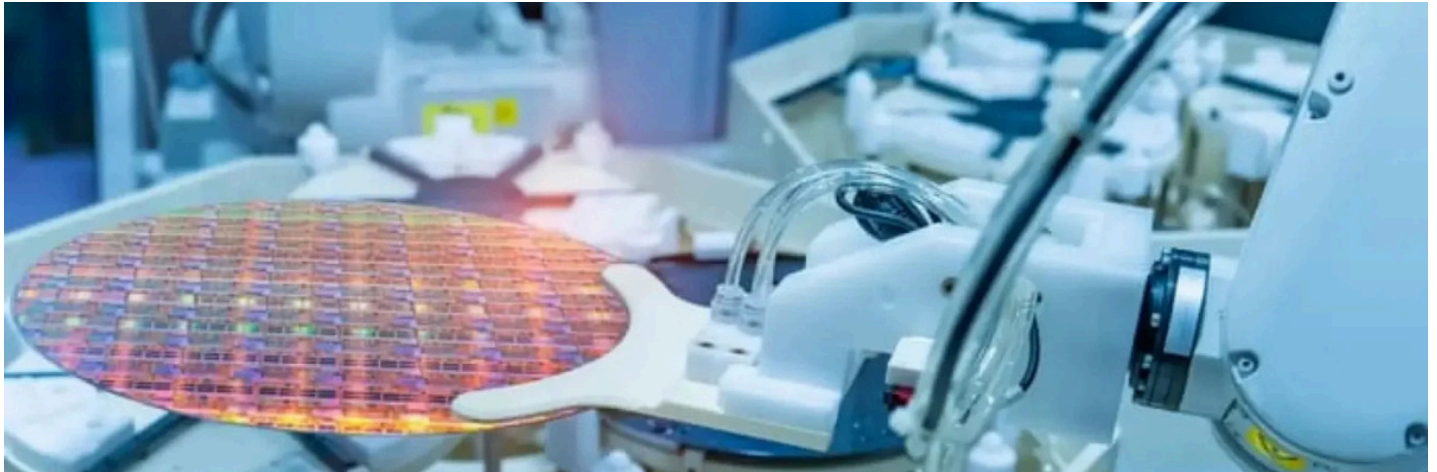


# Thermoset Polyurethanes and the Semiconductor Industry



## Understanding Thermoset Polyurethanes

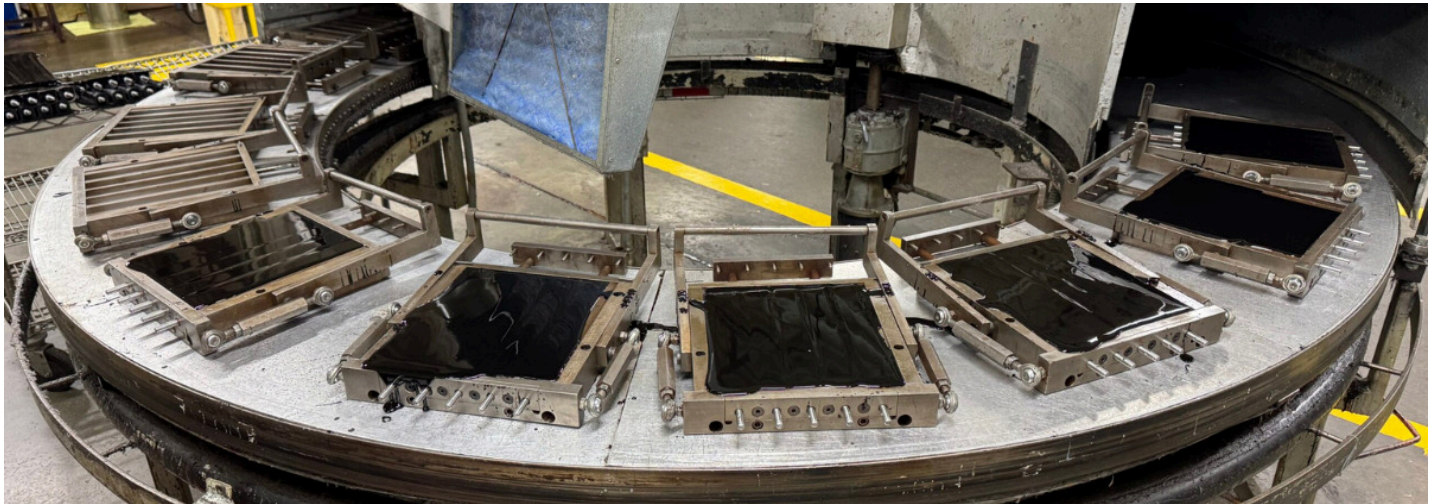
Polyurethane is a versatile, durable material that can be engineered to meet specific performance and design requirements. Thermoset polyurethanes, in particular, offer exceptional stability and resilience under demanding conditions. Unlike thermoplastics, which can be re-melted and re-formed, thermoset polyurethanes undergo a chemical change during the curing process, providing greater resistance to wear, chemicals, and heat. This makes them a superior choice compared to alternative materials like rubber, silicone, and plastics, which may not provide the same level of durability and performance. Polyurethane also offers excellent elasticity, tensile strength, and abrasion resistance, making it ideal for a wide range of applications. As a result, thermoset polyurethanes are increasingly being recognized as the material of choice for demanding industries like semiconductor manufacturing.

## Benefits of Thermoset Polyurethanes in Semiconductor Component Design

Design engineers in the semiconductor industry are tasked with creating components that can withstand extreme environments while meeting strict functional specifications. Thermoset polyurethanes provide significant advantages in this regard, offering unparalleled flexibility and strength.

Polyurethanes can be engineered to meet a variety of mechanical and physical properties, including hardness, flexibility, and chemical resistance, allowing engineers to tailor materials to their precise needs. Additionally, the material's versatility allows for unlimited design freedom, which is especially important when developing complex semiconductor parts.

MPC's proprietary manufacturing techniques provide a range of molding options, including injection molding, compression molding, and custom molding, ensuring that production quantities and part designs can be efficiently executed. Whether for prototypes or high-volume manufacturing, polyurethane components can be customized without compromising performance, enabling both small-batch production and large-scale runs. Furthermore, the long-lasting durability and superior wear resistance of thermoset polyurethanes contribute to the overall performance and longevity of semiconductor products.



## — PROS OF POLYURETHANES

### FLEXIBILITY & STRENGTH

Polyurethanes offer exceptional flexibility and strength across diverse applications, from cushioning and sealing to providing structural support. This makes them an ideal material for semiconductor components, which often need to function under pressure and in harsh conditions.

### CUSTOMIZABILITY & PERFORMANCE

Polyurethane formulations can be highly customized to meet specific requirements without compromising performance. Whether it's flexibility, rigidity, or resistance to chemicals, thermoset polyurethanes can be engineered to match exact specifications, ensuring optimal functionality.

### DESIGN & MANUFACTURING TECHNIQUES

Thermoset polyurethanes allow for unlimited design flexibility through various molding techniques. This ensures that semiconductor components can be produced with intricate designs, complex geometries, and precise tolerances to meet the evolving needs of the semiconductor industry.

## Conclusion

In conclusion, thermoset polyurethanes are transforming the landscape of semiconductor manufacturing. Their unique combination of flexibility, strength, customizability, and superior performance makes them an invaluable material for design engineers. The ability to tailor mechanical and physical properties to exact specifications, coupled with versatile manufacturing techniques, provides design teams with unmatched flexibility and cost-efficiency. As demonstrated by case studies, strategic material selection has led to significant improvements in device functionality, durability, and overall cost-effectiveness. With MPC's decades of experience and innovative solutions, we empower designers to navigate the complexities of semiconductor manufacturing, helping them bring forth a new era of groundbreaking, effective components and applications.

At MPC, we are committed to delivering the highest quality polyurethane products and solutions to help you stay ahead in a rapidly evolving industry. Whether you are designing complex semiconductor parts or high-performance components, MPC is your trusted partner in achieving success. Let us help you design the future of semiconductor technology.

## — ABOUT MEARTHANE PRODUCTS CORPORATION (MPC)

Mearthane Products Corporation (MPC) is a global leader in the development and manufacture of advanced polyurethane products and components. With over 50 years of expertise in formulation and processing, MPC partners with Original Equipment Manufacturers (OEMs) and contract manufacturers to deliver innovative solutions to meet the toughest material challenges. MPC's products are proudly made in the USA and shipped worldwide to meet the growing demands of high-performance equipment manufacturers.

MPC's industry-leading Durethane® formulations are engineered for superior performance and can be tailored into a wide variety of products and components. Through proprietary manufacturing processes, we produce an infinite array of shapes and volumes to meet diverse requirements. MPC seamlessly integrates with your product development and supply chain operations, providing the flexibility and reliability you need to stay ahead of the competition.

## Tell us what you're working on.

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