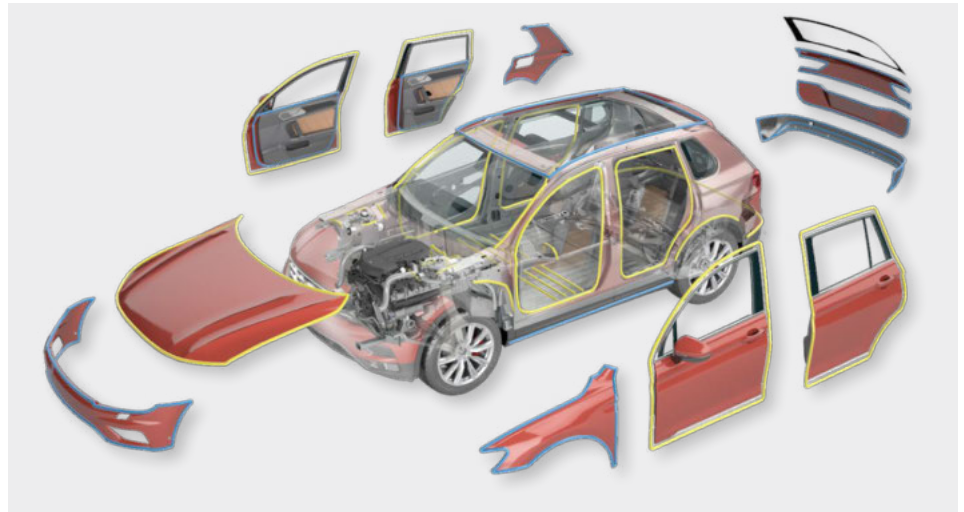


BETAFORCE™ Composite Bonding Adhesives for Lightweight Multi-material Vehicles



For high-performance bonding in lightweight multi-material vehicles, BETAFORCE™ composite bonding adhesive from DuPont enables significant weight reduction, acoustic performance, and corrosion protection. Design flexibility is maintained while processing performance and sustainability goals are achieved.

BETAFORCE™ is an ideal choice for joining carbon fiber and glass fiber composites and other dissimilar materials in a variety of lightweight designs, including modular assemblies. It can be used to bond coated metals like steel to aluminum, carbon fiber panels to steel or aluminum and sheet molding compound (SMC) to aluminum.

Composites are gaining traction in automotive production due to their weight-saving potential, yet they remain difficult to join. Adhesives offer a reliable alternative to traditional mechanical and thermal processes, which cannot be applied to these lightweight materials. Advanced bonding solutions such as BETAFORCE™ composite bonding adhesives from Dupont enable a continuous bond line and cohesive joining of surfaces.

- Structural roof assembly & attachment
- Tailgate/liftgate
- Trunk lids/Hoods
- Spoiler
- Door modules
- Body closures
- Passenger cells

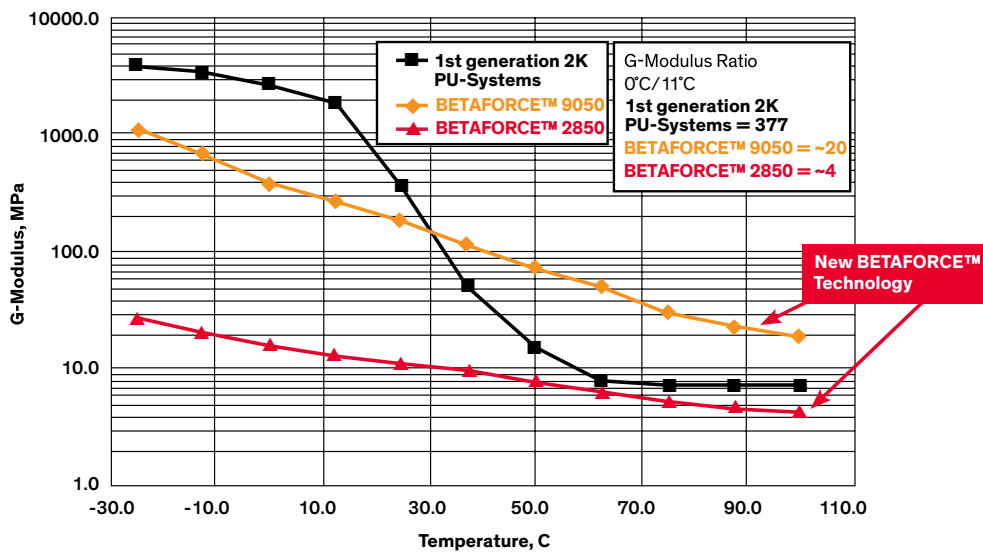
Recent formulations of BETAFORCE™ offer a cycle time of around one minute and are currently being used for mass series production. Open times can be adjusted to accommodate specific mounting requirements in the plant, such as a quicker curing time by infrared treatment and the initial adhesion requires no additional fixing tools.

Additional processing and performance benefits include:

- Enables reduction in wall thicknesses due to structural mechanical properties of adhesive
- Allows for optimization of substrates and adhesive joint structure
- Excellent temperature resistance and retention of modulus across the working temperature range
- Enables process time reduction and significant investment savings due to very fast acceleration capabilities
- Reduces process complexity due to primerless adhesion performance
- Provides a corrosion barrier between dissimilar materials
- Reduces noise, vibration and harshness and improves crash performance

- Demonstrates variable cure rates
- Exhibits broad range of mechanical and product properties
- Has very good bead stability during application
- Allows bonding in general assembly, after e-coat and/or painting
- Demonstrates handling strength in a few minutes with accelerated heat curing enabled by tailored chemistry
- Combines high modulus, high strength and high elongation in one system for effective management of differential CLTE (for example, carbon fiber composite to aluminum) even on long bond lines
- Provides effective sealing from water intrusion
- Improves durability due to optimized load distribution
- Optimal mix ratios at 1:1 by volume
- Available in bulk or small packaging

BETAFORCE™ performance—Shear modulus vs. temperature



Two-component, room-temperature curing BETAFORCE™ composite bonding adhesives enable light-weighting and dissimilar material bonding. The adhesives are optimized to retain strength and rigidity at elevated temperatures, providing industry-leading temperature stability for customer applications.

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