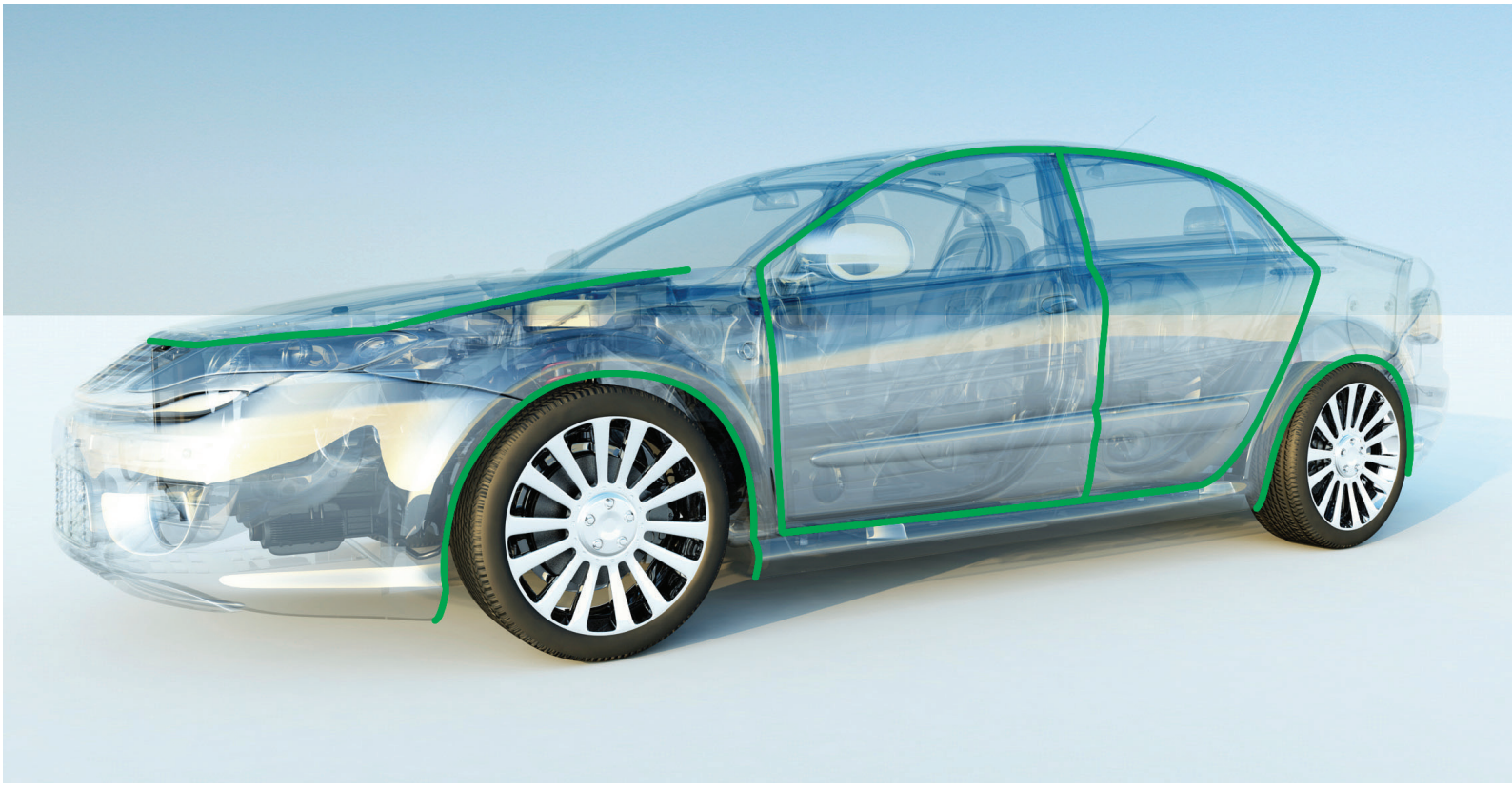
UNISEAL



Custom adhesive solutions

UNISEAL structural adhesives promote weight reduction and enhanced design

Deliver strength without “read-through”

UNISEAL formulations for structural adhesives provide greater design freedom to help manufacturers achieve significant weight reduction, lower emissions and improved fuel economy. They deliver outstanding durability and do not compromise a vehicle’s structural integrity, comfort and safety.

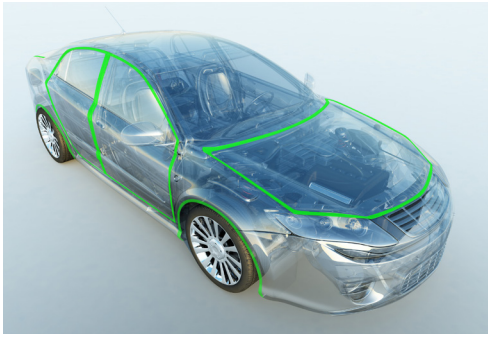
- Replace mechanical fasteners and minimizes welds
- Strengthen parts to allow use of thinner gauge and lighter weight materials, such as aluminum alloys, magnesium and carbon fiber
- One adhesive for all substrates — bonds to a wide variety of substrates, including “dirty oily” surfaces
- Provide strong bonds between differing substrates
- Impact resistance down to -40°C
- Long-term fatigue resistance
- Won’t produce “read-through”
- High and low modulus range

Easy to process

- Compatible with phosphate, E-coat and top coat systems
- Wash resistant — withstands aggressive alkaline bath in uncured stage
- Non-corrosive
- Flame retardant
- Ease of use — no specialized training

Available in:

- One component
- Two component
- Rust preventative
- Induction heat responsive



Application areas

- Roofs
- Hoods
- Decks
- Door liners
- Body panels

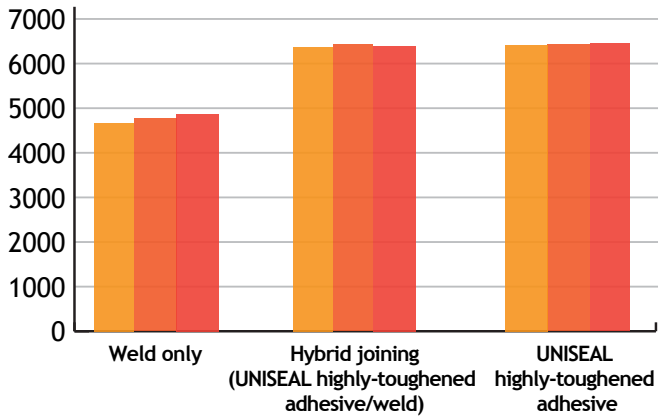
Highly-toughened adhesives increase crash resistance, durability and flexibility

Exclusive UNISEAL toughening formula delivers higher strengths in extreme temperatures

UNISEAL fracture-toughened adhesives are redesigned at a polymeric level to incorporate novel chemistries which result in higher strength and improved modulus — fundamental properties to achieving superior crash performance.

- Deliver multiple performance, production and cost-saving benefits over mechanical joining
- Perform at high impact in temperatures as low as -40°C
- Reduce fatigue and failure around spot welds and fasteners
- Provide strong bonds to differing substrates
- Seal to guard against corrosion
- Account for CLTE variance (alpha/delta), minimizing “read through” and racking
- Production friendly — apply at room temperature, no heating required
- Excellent washout resistance

Impact Test
Max. Load to Fail (N)



Toughened Adhesives create stronger bond than welding or hybrid joining

Average Load to Fail:

- Weld only 4769N.
- Hybrid joining 63997.28N
- Toughened adhesive 6430.77

Weld

Oily HDG substrate*, assembled 1" x 1", overlap, welded each to each other then baked at 175°C/30 minutes, tested at room temperature

Hybrid Joining

UNISEAL Toughened Adhesive applied on oily HDG substrate*, assembled 1" x 1", 0.010 bondline, overlap welded through bond and then baked at 715°C/30 minutes, tested at room temperature

Toughened Adhesive

UNISEAL Toughened Adhesive applied on oily HDG substrate*, assembled 1" x 1", 0.010 bondline, overlap baked at 175°C/30 minutes, tested at room temperature

* Hot dipped galvanized steel 0.84mm thickness, 1" x 4" size; Ferrocote 61 A US

UNISEAL

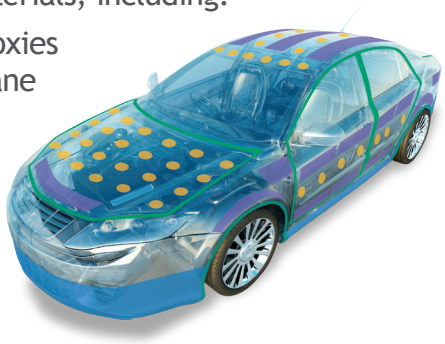
Innovative custom solutions to meet your unique challenges

Custom formulations give you greater design and manufacturing freedom. This, combined with unmatched speed-to-market, can lead to achieving true advantages that will take your competition years to reach.

UNISEAL provides a custom solution for every step in your process. By optimizing formulations to specifically fit your product design and manufacturing process, we help you increase throughput and efficiency, along with improved quality ratings.

Innovative developments in polymeric chemistries mean UNISEAL's research and development labs are sparked by the industry's demand for leaner, lighter, more cost efficient and environmentally friendly solutions in a variety of materials, including:

- Hybrid epoxies
- Polyurethane
- Silicone
- Acrylic
- PVC



Frost & Sullivan Award for Product Leadership

UNISEAL was recently awarded the 2014 North American Frost & Sullivan Award for Product Leadership. The award recognizes UNISEAL's ability to develop need-based solutions to suit a wide range of automotive and industrial bonding needs.

"UNISEAL has responded to automotive Original Equipment Manufacturers' (OEMs') desires for lighter and safer automobiles with a range of off-the-shelf and customized adhesive and sealant products," says Frost & Sullivan Research Analyst Ankit Mittal. "Although its products are primarily engineered to help bond different combinations of materials, they also address other notable issues such as susceptibility to corrosion factors of different materials and vulnerability to expansion when dissimilar metals come into contact," added Mittal.

UNISEAL

UNISEAL is a global supplier of specialty adhesives and sealants. Our products are custom developed to help you quickly tackle your most difficult challenges.