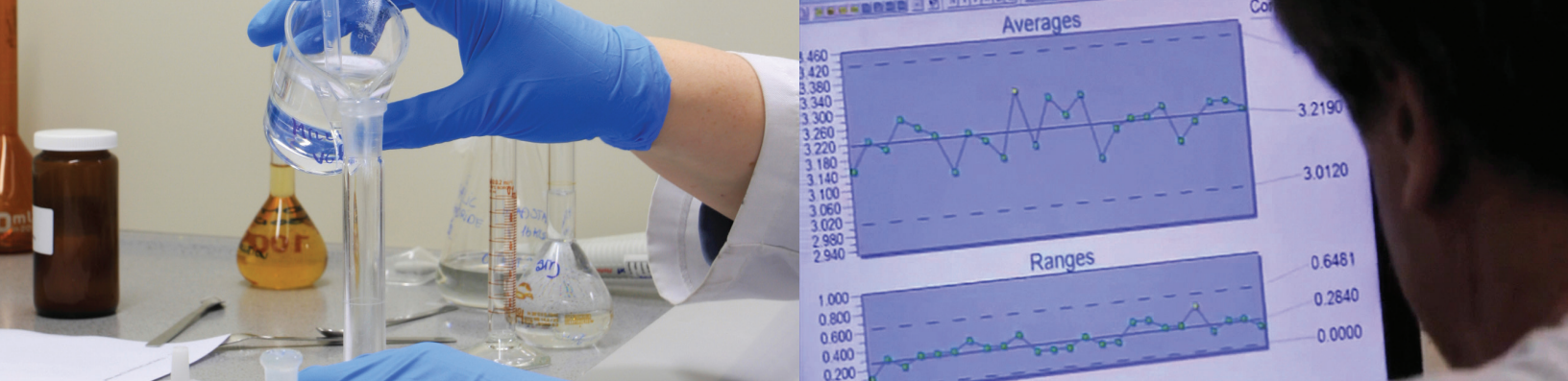


Custom-formulated anti-flutter materials  
reduce vibration, promote lightweighting



## Isolation of sheet metal components enables full design freedom

### Full range of expansion to over 1000 percent

UNISEAL anti-flutter products provide optimal isolation of sheet metal components from inner reinforcements to reduce vibration. They are engineered to meet the challenges of lighter weight body panels to provide designers with optimum freedom.

With an expansion range of 0 to >1000 percent, UNISEAL formulations give designers the freedom to pinpoint expansion to exacting needs. In addition to reducing vibration, UNISEAL anti-flutter products can be formulated to serve several functions, including stiffening and sealing.

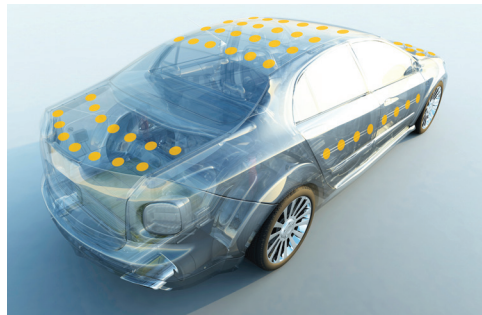
- Custom formulations to fit your specific requirements
- Can be formulated for paintability to improve aesthetics
- Promotes use of thinner metals to reduce weight and emissions
- Expansion range from 0 to >1000%
- PVC and non-PVC based products available
- Long-term resistance to environmental exposure
- Resistant to bond line “read-through”
- High and low modulus range

### Excellent adhesion to automotive substrates

- Aluminum
- Sheet Molding Compound (SMC)
- Cold-rolled steel
- Galvanized steel
- Fiber-Reinforced Plastic (FRP)
- E-coat primed steel

### Types

- PVC
- Non-PVC
- Weldable
- Anti-flutter/hem flange adhesive
- Anti-flutter/BPR
- Anti-flutter/sealant



### Typical applications

- Doors
- Hoods
- Trunk lids
- Roofs
- Body panels



## Production and environmentally friendly; reduces production cost and uses less energy

### Won't sag or slide

UNISEAL anti-flutter products are dispensed with positive displacement pumps to improve manufacturing efficiency and quality. They may be applied in “drops” or extrusions. Anti-flutters are typically applied in the body shop and polymerize and expand when cured in process ovens.

- May be applied in “drops” or extrusions with various application tips
- Bites through stamping lubricants
- Strategic placement of drops on panel, can also provide support for outer panel making them less vulnerable to denting
- Uncured adhesive will not sag or slide when traveling from body shop to paint shop process ovens
- Excellent resistance to displacement or wash-off from phosphate cleansing process
- Does not cause contamination of the phosphate or EC baths in the body shop
- Environmentally friendly – near zero VOCs, no heavy metals or other environmental contaminants

### Every batch tested to conform to spec

It's one thing to formulate anti-flutter material to meet your specification. It's another thing to consistently produce it in large volume. You can rely on UNISEAL to do both.

Variations in rheological properties from batch-to-batch can cause anti-flutter material to fall out of spec. This can create expensive and time-consuming production problems.

UNISEAL's Six Sigma quality program demands every batch be tested to conform to customer specifications. Nothing ships until it's tested and approved.

### Stable for life of product

The rheological properties of UNISEAL anti-flutter materials remain stable up to the expiration date on the product label. You get the same performance range on the expiration day as you do on day one.



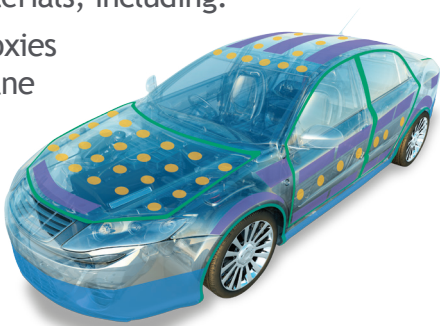
## Innovative custom solutions to meet your unique challenges

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