

ADHESIVES VS. SEALANTS – UNDERSTANDING THE DIFFERENCE

Although adhesives and sealants are sometimes used in similar applications, they serve fundamentally different purposes. Confusing the two can lead to incorrect product selection—and ultimately to performance or safety risks.

Different Functions, Different Performance

- **Sealants** are designed to seal joints and gaps between surfaces, creating airtight and watertight connections.
- **Adhesives** are engineered to bond materials together, transferring loads and ensuring structural integrity.

While both products may appear similar in application, their performance characteristics are entirely different.

Strength and Mechanical Behavior

The key distinction lies in **strength and load-bearing capacity**:

- **Adhesives**
 - High mechanical strength (typically > 1000 psi lap shear)
 - Lower elongation at break
 - Designed for structural bonding and load transfer
 - High cohesion and long-term durability
- **Sealants**
 - Lower mechanical strength (typically < 1000 psi lap shear)
 - Higher flexibility and elongation
 - Designed for movement accommodation and sealing
 - Susceptible to creep under sustained load

In short:

Adhesives hold. Sealants seal.

Sealants should never be used as primary bonding materials, as they lack the structural performance required to reliably connect materials over time.

Material Structure and Durability

Adhesives are formulated with a more highly cross-linked molecular structure, providing:

- Strong internal cohesion
- Superior adhesion to substrates
- Long-term resistance to mechanical and environmental loads

This makes them more rigid and durable—essential qualities for structural applications where components must remain securely bonded throughout their service life.

Sealants, by contrast, are optimized for flexibility and environmental sealing rather than structural strength.

Choosing the Right Solution

Selecting the correct product requires careful consideration of the application. Engineers and designers must evaluate:

- **Structural vs. non-structural application**
Does the bond need to carry loads? If yes, a structural adhesive is essential.

- **Substrate materials**
What materials are being bonded, and how do they behave under stress?
 - **Environmental conditions**
Including temperature ranges, UV exposure, moisture, and chemical exposure.
 - **Type of stresses**
Tensile, compressive, or torsional loads—constant or intermittent.
 - **Material compatibility**
Differences in thermal expansion, stiffness, or elongation between substrates.
 - **Application parameters**
Surface preparation, bond line thickness, orientation (horizontal/vertical), curing requirements, and processing time.
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The TWEHA® Approach

At TWEHA®, all these factors are carefully integrated into the formulation, production, and application of our adhesive systems.

Our adhesives are specifically developed for façade cladding applications, where long-term structural performance, durability, and safety are critical. By focusing on the correct use of true structural bonding solutions, we ensure reliable results under real-world conditions.

Bottom line:

Choosing between an adhesive and a sealant is not a minor detail—it is a critical engineering decision that directly impacts performance, durability, and safety.

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