Advanced Engineering: Smart. Strong. Science.

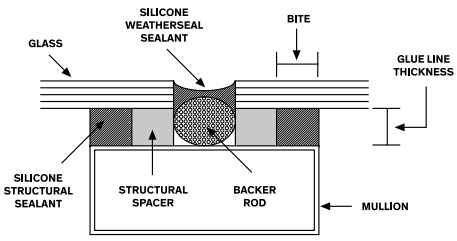
Dow Building Science helps you reach higher design stresses

As a global leader in structural silicone glazing (SSG) technology, Dow Building Science can claim a broad range of notable achievements in changing the face of the world's cities. These include numerous structural silicone sealant innovations; collaborative problem-solving with our well-respected teams of industry specialists; in-depth technical support for increasingly complex, aesthetically appealing building façade designs; and significant design research, materials testing and analysis.

To help address changing design trends, Dow now has a program that can validate the use of higher allowable stresses in structural glazing design while using demonstrated-successful conventional design methods and Dow's highly reliable and trusted structural silicone sealants. No special sealants are required for the increased allowable stress. Selected high-performance DOWSIL™ Brand Silicone Structural Glazing Sealants can be utilized for applications requiring higher allowable stresses.

Silicone strong: High performance by design

In SSG, a silicone sealant (adhesive) is used to attach glass, ceramic, metal, stone or composite panels to a building's frame. This creates a continuous, flexible rubber anchor that accommodates building loads or movements and helps prevent air and water intrusion. Only silicone sealants possess the exceptional combination of adhesive strength, flexibility and weather resistance that is required for structural glazing applications. The basic elements of SSG design are shown here.



Focus on material behavior

In a quest to push the boundaries of architectural design, architects and building designers seek to innovate with taller buildings, larger lites of glass, reduced use of metal framing and special-shaped glazing for curved surfaces. More advanced engineering analysis is being utilized to enable these more distinctive or challenging SSG designs.

Dow has leveraged its experience and engineering know-how in material science and Finite Element Analysis (FEA) to gain a fundamental understanding of silicone sealant behavior and capability in structural silicone glazing applications. Appropriate engineering and design of the joint geometry is highly efficient and optimized for enabling higher allowable stresses. Dow's understanding of sealant behavior is the backbone of the program to allow the use of higher allowable stresses in structural glazing design while using conventional design methods.

Advanced engineering is key

With extensive research and testing, Dow SSG specialists studied the sealant behavior in applications, the influence of joint geometry on the distribution of stresses within the sealant and the influence of the shape of the joint on how the sealant will behave under wind load. Theoretical model analysis was validated by actual application-performance testing.

When SSG design guidelines were developed, an allowable stress of 20 psi (0.14 MPa) was adopted by the glazing industry as the design standard for structural silicone glazing sealants. This allowable stress could compensate for challenges such as material aging and variance in production tolerances. In addition, it also maintains a robust safety factor for unforeseen SSG interactions. With increased fundamental understanding of sealant behavior, Dow has better insight on the effects of these potential interactions and supports an increase in allowable sealant stresses up to 30 psi (0.21 MPa) for designs with some additional requirements.

Smart. Strong. Science.

No special sealants are required for the increased allowable stress. Demonstrated-successful high-performance DOWSIL™ Brand Silicone Structural Glazing Sealants can be utilized for applications requiring higher allowable stresses. Different sealants will not have to be switched in and out of production to maintain manufacturing productivity.

The currently available DOWSIL™ Brand Silicone Structural Glazing Sealants for façade applications with higher design stresses are shown on page 2.

We celebrate the 50th anniversary of Dow's pioneering 4-sided silicone structural glazing (SSG), which has enabled the many visually stunning façades seen in cities worldwide today.

50 YEARS
4-Sided Silicone Structural Glazing

DOWSIL™ Brand Silicone Structural Glazing Sealants for façade applications with higher design stresses

Dow offers a selection of one-part and two-part silicone sealants for structural glazing applications with higher design stresses.

- **One-part** RTV silicone sealants for structural glazing applications:
  - DOWSIL™ 995 Silicone Structural Sealant
  - DOWSIL™ 895 Structural Glazing Sealant
  - DOWSIL™ 795 (APAC) Structural Glazing Sealant
- **Two-part** RTV silicone sealants for structural glazing applications:
  - DOWSIL™ 121 Structural Glazing Sealant
  - DOWSIL™ 983 Silicone Building Sealant
  - DOWSIL™ 993 Structural Glazing Sealant
  - DOWSIL™ 993N Structural Glazing Sealant

For more information

Learn more about our full range of high-performance products and services by visiting **dow.com/buildingscience**.

Dow has sales offices, manufacturing sites, and science and technology laboratories around the globe. Find local contact information at **dow.com/contactus**.

Explore our broad range of DOWSIL™ Brand Silicone Structural Glazing Sealants and reach higher and design creatively with Dow Advanced Engineering – support to help you ensure proper joint geometry design and long-term bonding strength in cutting-edge SSG applications. Rely on our materials innovation, application experience, broad technical services, and global supply capabilities with local support. Contact your Dow Technical Representative or visit **dow.com/advancedengineering**.

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