



Sika Solutions:

For Sealing and Bonding in Façades,
Fenestration and Insulating Glass (FFI)







Safety... fire protection, and burglary- and bomb blast-resistance.

Protection from the environment... extremes of temperature, the elements, humidity and noise.

Aesthetics... the result of design and material-selection freedom.

Profitability... thanks to the durability of materials, energy savings and low maintenance costs.

Introduction – Facades and Windows

The envelope is central to any building's design. The façade not only determines the first visual impression of the building, but contributes to climate control and to the interior's ambiance.

Accordingly, façade design requirements are numerous -- and are growing increasingly demanding as standards for energy conservation become more stringent. The challenge is to develop sustainable systems and components which meet the new design requirements *and* ensure safe and economical façade and window construction.

Sika continues to be committed to developing new products and systems for sealing and bonding of façades and windows. Our products are designed to meet the systems' demands relative to the latest technologies, and to meet the specific design requirements of leading architects, specifiers and curtain-wall and window manufacturers.

Sika Solutions for Sealing and Bonding in Façades

Curtain-Wall Façades

- Ⓐ Structural glazing, insulating glass, weather-sealing
- Ⓑ Natural stone façades
- Ⓒ Panel reinforcing, panel lamination
- Ⓓ Glass-wall grouting, glass-to-glass applications

Ventilated Façades

- Ⓔ Panel bonding, water/vapour-proofing, chemical anchoring
- Ⓕ Window bonding, general bonding, water/vapour-proofing

For details, see Pages 6 – 8.

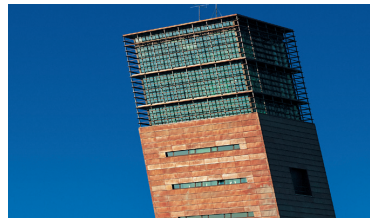




Curtain-Wall Façades

Curtain-wall façades are a lightweight, multifunctional building envelope component, composed of glass (single- or multi-pane units), metal, stone or composite panels. These panels are fixed to a metal sub-frame with pressure plates (capped systems), or bonded with silicone structural glazing adhesive-sealants. The entire system is mechanically-fixed to the main building structure.

Curtain-wall façades are today's state-of-the-art technology for high-rise buildings.

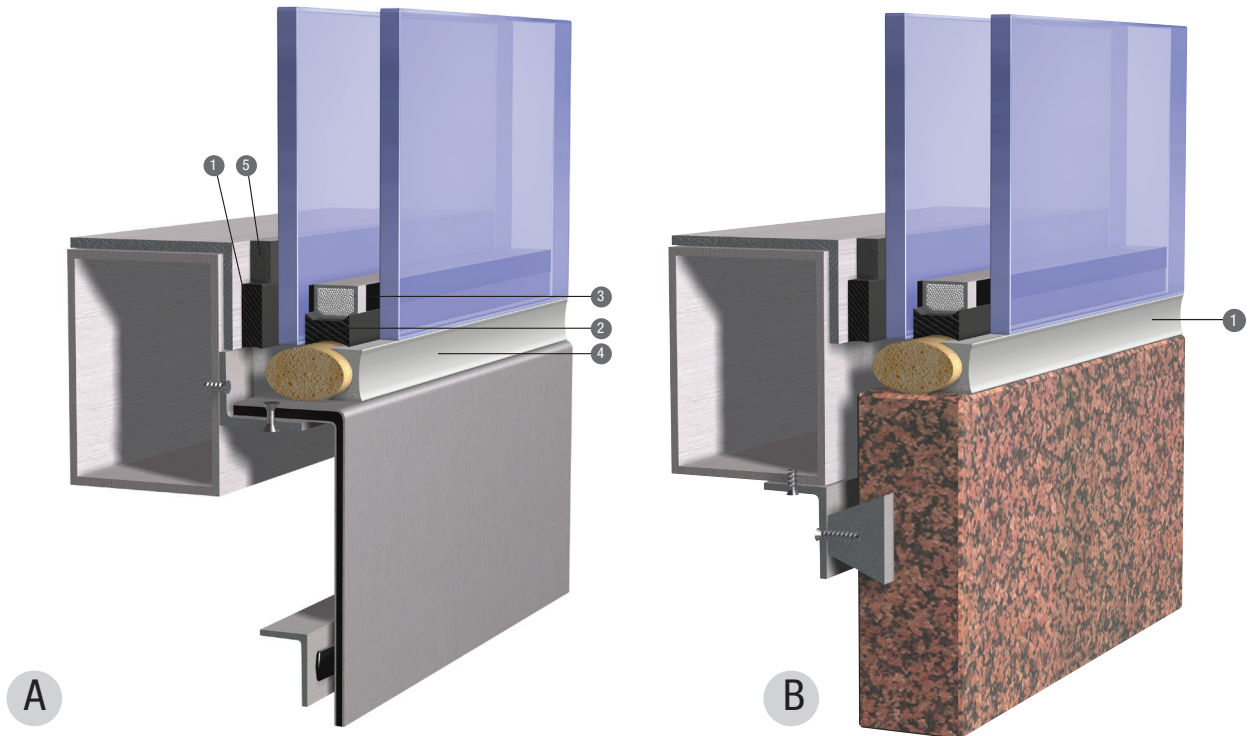


Ventilated Façades

Ventilated façades are composed of a wall, mainly concrete or steel, with an external (or internal) insulating layer and decorative panels. The air gap between the insulating and decorative surfaces is used for the ventilation of the façade.

The decorative panels can be composed of a variety of materials, such as metal, composite materials, ceramic, and timber, etc. They offer the architect significant design freedom.

Curtain-Wall Façades



Structural Glazing

Sika's structural glazing adhesive-sealants, Sikasil® SG-18, SG-20, and SG-500 CN, have shown their excellent UV-resistance and weatherability in major projects around the world. The high-modulus SG adhesive, Sikasil® SG-550, allows for minimized joint bites.

① **Sikasil® SG-500 CN, Sikasil® SG-550**

① **Sikasil® SG-18, Sikasil® SG-20**

Insulating Glass

Sika offers a complete range of products for IG sealing, including: Sikasil® IG-25, Sikasil® IG-25 HM Plus and SikaGlaze® IG-4429 HM as an option for standard applications. When stringent European Argon-gas retention standards must be met, we recommend Sikasil® IG-25 HM Plus for its superior performance.

② **Sikasil® IG-25**

② **Sikasil® IG-25 HM Plus**

② **SikaGlaze® IG-4429 HM**

Weather-Sealing

Structural glazing systems are built up using adhesives and sealants, often over a combination of different substrates. For everything to work seamlessly, high-quality products designed to overcome compatibility issues are required. Sikasil® WS products have been engineered to work with Sikasil® SG and IG products, taking the guess-work out of system design.

④ **Sikasil® WS-305 CN**

④ **Sikasil® WS-295**

④ **Sikasil® WS-290**

Additionally, Sika supplies fully-compatible glazing tapes for use with its adhesives and sealants.

Non-Stain Weather-Sealing

The properties of natural stone (granite, marble, sandstone, etc.) are such that they require the use of non-staining silicone sealants for weather-sealing. Sikasil® WS-295 and Sikasil® WS-290 have been designed specifically to accommodate this requirement. Prior to use, however, it is recommended that the compatibility of the sealant be tested at one of Sika's FFI Competency Centres.

① **Sikasil® WS-295**

① **Sikasil® WS-290**

Fabrication/Assembly Sealants

Sika's neutral-cure assembly sealants, Sikasil® N-Plus and Sikasil® SG-10, are AAMA-certified for standard- and impact-glazing in window backbedding and glazing applications. Sikasil®-200 MJS has been designed specifically for sealing miter joints in window fabrication.

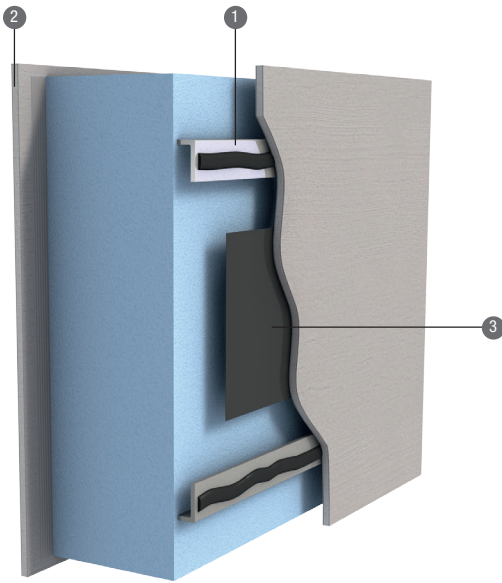
Sikasil® N-Plus

Sikasil® SG-10

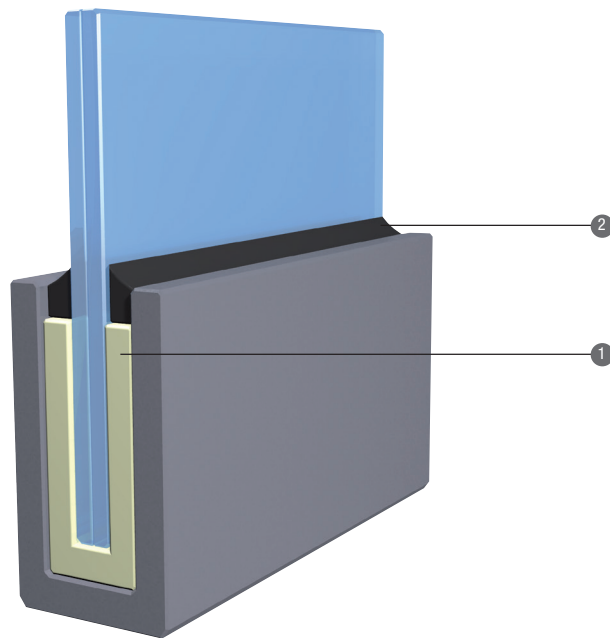
Sikasil®-200 MJS

Did you know?

Sikasil® SG-550 ($\sigma_m = 0.20 \text{ N/mm}^2$) and Sikasil® IG-25 HM Plus ($\sigma_m = 0.19 \text{ N/mm}^2$) achieve the highest ETA-approved design stress in tension values in the market? This allows for reduced joint sizes.



C



D

Panel Reinforcing**

Large panels are the latest trend in curtain-wall design. To counteract the increased weight of these panels, their thickness is often decreased, leading to the bonding of metal or plastic profiles to their back-side to stiffen and protect the panels against flutter-type instability.

- ① **SikaFast® Acrylic Adhesives**
- ① **SikaPower® Epoxy Hybrid Adhesives**
- ① **Sikasil® SG Silicone Adhesives**
- ① **SikaBond® PU Adhesives**

Panel Lamination

Sika is a supplier of the adhesives that go into the manufacture of the panels used to create the spandrel sections. Because of their excellent adhesion to a wide variety of materials, these adhesives are perfect for marrying the various materials needed to create effective thermal insulation.

- ② **SikaForce® PU Systems**

Sound Damping

SikaDamp® is an easy-to-install solution to reduce the noise of structure-borne vibrations or external impact noise (rain and hail) on metal and composite panels.

- ③ **SikaDamp® Butyl Sheet**

** Not available in Canada or the USA.

Glass-Wall Grouting

In total vision glazing (TVG or fin glazing) and glass balustrades, for low punctual stress transfer to the glass, the glass panes are fixed to the floor. Sikasil® GS-621 and SikaGlaze® GG polyurethane adhesives are recommended for embedding the bottom glass edge and ensuring uniform stress distribution. This is followed with a bead of Sikasil® WS silicone sealant to protect the polyurethane from weathering.

- ① **SikaGlaze® GG PU Systems**
- ① **Sikasil® GS-621**
- ② **Sikasil® WS-295**
- ② **Sikasil® WS-290**
- ② **Sikasil® WS-305 CN**

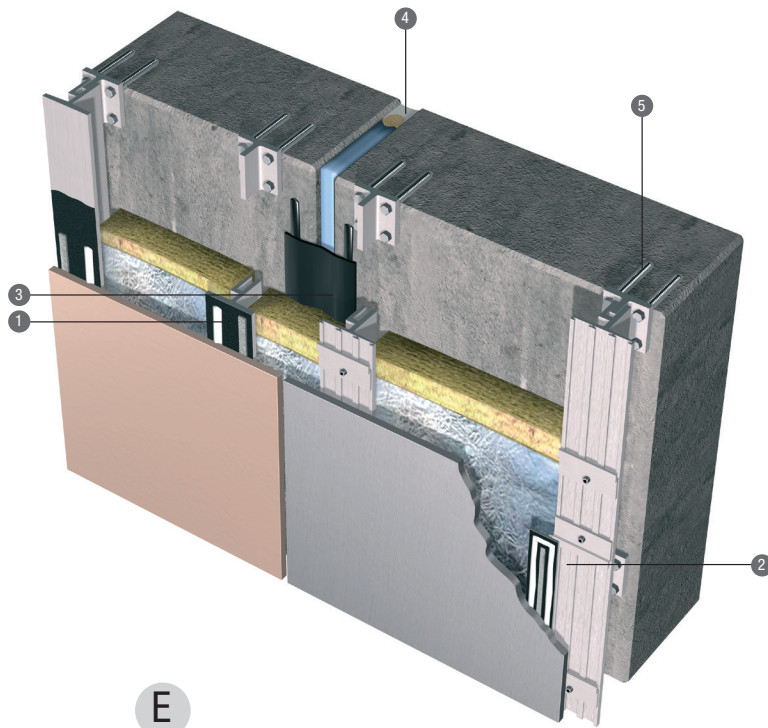
Glass-to-Glass Construction

Sika offers a variety of silicone sealants for glass-to-glass applications: Sikasil® WS-295 and Sikasil® WS-305 CN for sealing laminated and monolithic glass, and high-modulus Sikasil® SG-18 and Sikasil® SG-20 for high-strength glass-to-glass bonding.

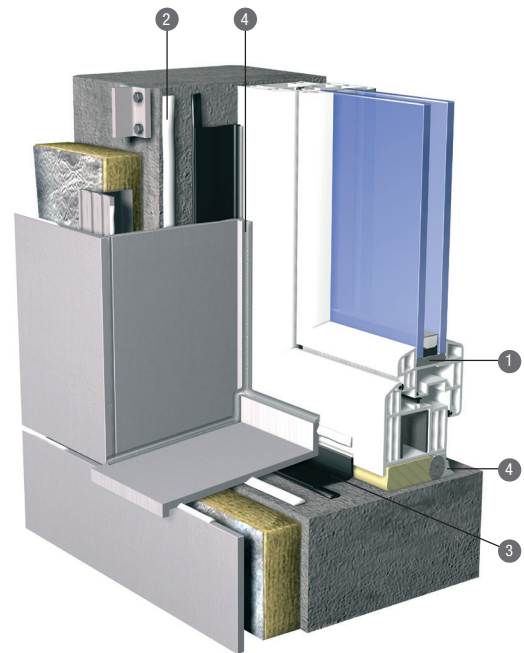
- Sikasil® WS-305 CN**
- Sikasil® WS-295**
- Sikasil® SG-18**
- Sikasil® SG-20**

NOTE: Always test for compatibility before bonding on laminated glass.

Ventilated Façades



E



F

Panel Bonding

The SikaTack® Panel System consists of a degreaser, primer, one-component resin adhesive, and double-sided adhesive tape. The tape serves to control the resin-adhesive flow by creating channels into which to gun the resin, ensuring the optimum adhesive-bead thickness, and providing secondary mechanical support while the resin adhesive fully vulcanizes.

Sika AnchorFix® is used for anchoring into the wall the aluminum substructure to which the panels are affixed.

This system maximizes design freedom.

- 1 **SikaTack® Panel System**
- 5 **Sika AnchorFix®**

For panel sound-damping solutions, see C on page 7.

Water/Vapour-Proofing (In E and F above)

Sika offers two different types of products for movement/connection joints and window-frame perimeter sealing. Climatic conditions often determine the choice between “wet” sealants, such as Sikaflex® polyurethanes or Sikasil® silicones, or “dry” sealants, such as SikaMembran® – a high-quality system with optimized water/vapour diffusion-resistance levels.

- 2 **Sikaflex® Sealants**
- 2 **Sikasil® WS-305 CN**
- 2 **Sikasil® WS-290, Sikasil® WS-295**
- 4 **SikaMembran® Systems**

Structural Window Bonding

Silicone and hybrid adhesives offer several performance and cost advantages over tapes and gaskets. Sealant/adhesives provide better air- and water-infiltration performance and lower inventory and logistics costs, while also enabling window designers to develop systems to meet hurricane and bomb-blast impact glazing requirements.

- 1 **Sikaflex®-552**
- 1 **Sikasil® SG-10**
- 1 **Sikasil® SG-18**
- 1 **Sikasil® SG-502**
- 4 **Sikasil® WS-295**
- 4 **Sikasil® WT-480**

Sika® Solutions at a Glance



California Academy of Sciences,
San Francisco, CA.

Bonding Technologies

Structural Glazing and Insulating Glass Edge Sealing

Sikasil® SG and Sikasil® IG high-modulus silicones

Panel Bonding

SikaTack® Panel high-strength PU system for façade-panel bonding.

Panel Lamination

SikaForce® PU adhesives for sandwich panel production.

Panel Reinforcement/Strengthening

SikaBond®, SikaFast®, SikaPower®, and Sikasil® SG for efficient reinforcement of façade panels and cladding.

Window Bonding

SikaFast®, Sikaflex®, and Sikasil® WT for structural strengthening of all material-types of window sashes through direct bonding of IG units.

Sealing Technologies

Joint Sealing

Sikasil® WS specialized low-modulus silicones for glass, metals, natural stone and plastics.

Sikaflex® high-end PU and PU-hybrid sealants for movement and connection joints (preferably on porous substrates).

Joint Membranes

SikaMembran® flexible, high-quality membrane systems for highest-demand joint sealing.

Anchoring Technologies

Sika AnchorFix® high-strength and fast-curing chemical anchoring.

Grouting Technologies

SikaGlaze® high-strength, self-levelling PU systems for embedding glass panes.

Sikasil® IG

Sikasil® SG

Sikasil® WS

Sikasil® WT

Sikaflex®

SikaMembran® Systems

SikaTack® Panel Systems

SikaDamp®

SikaBond®

SikaGlaze®

SikaForce®

SikaFast®

Sika AnchorFix®



Royal Ontario Museum, Toronto, Canada

Sika's Façade and Fenestration Expertise

Technical Services: FFI Competence Centres

Sika's strategically-located FFI Competence Centres' mission is to develop new products and processing technologies, and to test innovative sealing and bonding methods. Our FFI specialists provide individualized project service and support for projects around the world -- from planning through to execution.

We Perform -- You Benefit

Sika places great importance in interdisciplinary cooperation between it and its partners in the glass, window and curtain-wall industries, especially when it comes to the development of new products for sealing and bonding. This cooperation has led to the creation of complete ready-to-install solutions for integrated façade and window systems.

- Technical support, including assistance with joint design and dimension calculations
- Comprehensive adhesion and compatibility testing, using actual project materials
- Technical support when external testing is required
- Application technology-selection advice
- System and equipment engineering advice and support
- Applicator training, and practical advice and assistance – both in the planning stages and on-site
- Warranty-related manufacturing procedures





Highlight Towers, Munich, Germany

The Royal Ontario Museum

The Royal Ontario Museum (ROM), located in the heart of Toronto's downtown core, is Canada's largest museum of world culture and natural history. After first opening in 1912, and undergoing further expansion in 1933, a main entrance designed by Daniel Libeskind, the "Crystal", was completed in 2007.

As the name suggests, the new addition features a crystalline form, constructed of glass and extruded aluminium cladding affixed to a steel framework structure. It successfully modernizes and complements the original Italianate Neo-Romanesque design of the ROM.

The cladding, fabricated by Josef Garner in Germany, was affixed to the steel structure using Sikasil® SG-500 CN. SikaMembran® provides vapour control layers and waterproofing barriers, and Sikasil® WS-305 CN provides weather-sealing.

30 St Mary Axe (Swiss Re)

Impressive as much for its unique design as for its height -- 180 m, making it the 6th tallest building in London -- the Swiss Re(insurance) building is easily one of the most recognizable of London's many remarkable landmarks. Opened in 2004, the "Gherkin", as it is affectionately known, is London's first environmentally-sustainable high-rise, built using 70,000 square meters of glass and metal in a double skin façade. The structure was sealed with 55 km of sealing material, consisting of Sikasil® SG silicones, Sikaflex® polyurethanes, and the SikaMembran® System.

Munich Business Towers

The Highlight Towers -- German-American architect Helmut Jahn's 126 m and 132 m tall, seemingly transparent, bridge-linked office towers -- have become a prominent feature of the Munich landscape. Their operable windows have earned the buildings' ventilation system recognition for its environmental-friendliness. Both SikaMembran® and Sikasil® weather-sealing systems were used in their construction.

Sika Worldwide



With the help of approximately 14,000 employees, and subsidiaries in more than 77 countries, Sika supplies the specialty chemicals market world-wide. It is a leader in processing the materials used in sealing, bonding, damping, reinforcing and load-bearing-structures' protection in construction (buildings and infrastructure construction). Sika supplies a complete line of high-quality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring and membranes.

Additionally, it supplies the manufacturing sector with sealing, bonding and damping products for vehicle, ship, building-components, equipment, solar- and wind-power equipment manufacturers.

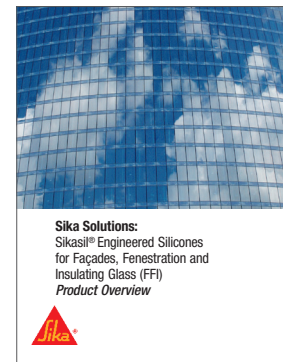
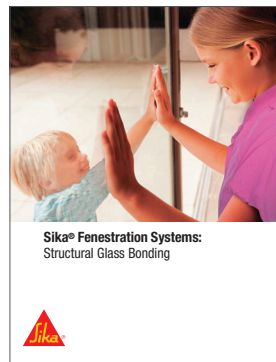
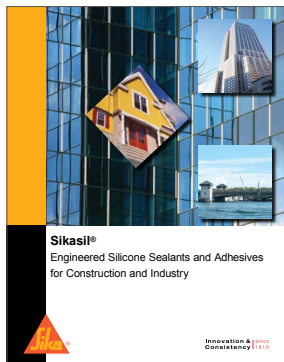
Sika North America Plant Locations

Montreal, Quebec
Edmonton, Alberta
Lyndhurst, New Jersey
Lakewood, New Jersey
Marion, Ohio
Grandview, Missouri

North American Silicone Competence Centre

995 Towbin Avenue
Lakewood, NJ 08701

Also available:



The information and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions, within their shelf life. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users should always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request or can be accessed in the Internet under www.sika.ca.

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