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left: Royal Ontario Museum, Toronto Extension Michael Lee-Chin Crystal
Architects Studio Daniel Libeskind; Facade Josef Gartner

front: Palais de justice de Paris (2017)
Architects Renzo Piano Building Workshop; Facade Permasteelisa
BUILDING ENVELOPE

FACADE AND WINDOWS
The building envelope design is a central part of the building’s planning process. The facade not only provides the first visual impression of the building but also impacts the climate control of the building and thus the way we feel in the building.

Therefore the design requirements of the facade are manifold and have become increasingly demanding. The standards for energy saving and gain have become more stringent and will strongly influence future developments. The challenge is to develop sustainable systems and components which meet the requirements of modern design and ensure safe and economical facade and window construction.

Sika continues to develop new products and systems for sealing and bonding facades and windows to meet the demands of systems for the latest technology know-how. Sika aims to develop its sealing and bonding technologies to meet the specific market requirements in close cooperation with leading architects, specifiers and curtain wall and window fabricators.
CURTAIN WALL FACADE
A curtain wall facade is a lightweight multifunctional building envelope made of glass (single- or multi-pane units), metal, stone or composite panels. These panels are fixed to a metal subframe, either with pressure plates (capped systems) or bonded with silicone adhesive sealants (structural glazing). This system is mechanically fixed to the main building structure. Curtain wall facades are the state-of-the-art technology for high-rise buildings.

VENTILATED FACADE
Ventilated facades consist of a wall construction, mainly concrete or steel, with an external (or internal) insulating layer and decorative envelope. The air gap between the insulating and decorative surfaces is used for the ventilation of the facade. The decorative panels can be made of a variety of material such as metal, composite materials, ceramics, timber, etc. and offer the architect significant freedom of design.
STRUCTURAL SEALANT GLAZING
Structural glazing modules are subject to extremely high stresses. They must accommodate wind and snow loads as well as thermal expansion. Furthermore they permanently transfer the forces to the support structure, while also withstanding weathering over many years. High-modulus Sikasil® SG silicone adhesive sealants offer the best properties for this purpose.

INSULATING GLAZING
In insulating glazing, double or triple glazing alike, it is particularly important that no water vapor should penetrate into the space between the panes and, in case of noble gas-filled units, the gas losses should be reduced to a minimum. Thus, a double-sealed edge seal system is state of the art. Sika offers a complete product range for IG edge sealing including primary and secondary sealants, suitable for gas retention of 30+ years.

Recommended Sika products

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<th>Product</th>
<th>Description</th>
<th>Approval Details</th>
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<tr>
<td>Sikasil® SG-500</td>
<td>2-part structural glazing adhesive, cartridge solution for onsite repair available,</td>
<td>For Europe: ETAG approved, CE marked For America, Asia, Middle East: ASTM approved</td>
</tr>
<tr>
<td>Sikasil® SG-550</td>
<td>2-part structural glazing adhesive, very high mechanical strength, design factor σdyn 0.20 MPa,</td>
<td>ASTM and ETAG approved, CE marked</td>
</tr>
<tr>
<td>Sikasil® SG-550 HM Plus</td>
<td>2-part structural glazing adhesive, very high mechanical strength, design factor σdyn 0.20 MPa,</td>
<td>EN1279-2 and -3 and ETAG approved, CE marked, ASTM approved</td>
</tr>
<tr>
<td>Sikasil® SG-20</td>
<td>1-part structural glazing adhesive, high mechanical strength and movement capability, design</td>
<td>ASTM approved</td>
</tr>
<tr>
<td>Sikasil® SG-18</td>
<td>primary and secondary sealants, suitable for air- and gas-filled IG units, tested against</td>
<td>EN 1279-4</td>
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</table>

SYSTEM BENEFITS
- Strong but flexible fixation of glass units
- Attractive appearance without visible frames
- No shading of glass edges, no thermal stress
- Most energy efficient facade technology

www.sika.com/ffi-sg

Recommended Sika products

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<th>Product</th>
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<tr>
<td>Sikasil® IG-25</td>
<td>2-part silicone insulating glass secondary seal, design factor σdyn 0.17 MPa, suitable for air- and gas-filled IG units, tested against EN 1279-4</td>
<td>EN-1279-2 and ETAG approved, CE marked, ASTM approved</td>
</tr>
<tr>
<td>Sikasil® IG-25 HM Plus</td>
<td>2-part silicone insulating glass secondary seal, design factor σdyn 0.19 MPa, suitable for air- and gas-filled IG units, EN1279-2 and -3 and ETAG approved, CE marked, ASTM approved</td>
<td></td>
</tr>
<tr>
<td>Sikasil® IG-25</td>
<td>2-part silicone insulating glass secondary seal, design factor σdyn 0.17 MPa, suitable for air- and gas-filled IG units, tested against EN 1279-4</td>
<td>EN-1279-2 and ETAG approved, CE marked, ASTM approved</td>
</tr>
<tr>
<td>SikaGlaze IG-5 PIB</td>
<td>Butyl insulating glass primary seal, suitable for air- and gas-filled IG units, tested against</td>
<td>EN 1279-4</td>
</tr>
</tbody>
</table>

SYSTEM BENEFITS
- Compatible system approach in IG, SG and WS applications
- Sikasil® IG grades and SikaGlaze IG-5 PIB available in black and grey
- Perfect color matching of grey Sikasil® IG and SikaGlaze IG-5 PIB with Sikasil® SG and WS and Sika® Spacer Tape HD
- IG sealants tried and tested on all common IG production lines and application machines

www.sika.com/ffi-ig
left:
Hotel W, Barcelona, 2006
Architects Ricardo Bofill; Facade UTE Facadas

top right:
20 Fenchurch Street, 2015
Architects Rafael Viñoly Architects, Adamson Associates
Facade Permasteelisa, Josef Gartner

bottom right:
30 St Mary Axe, (Swiss Re), London, 2004
Architects Foster & Partners; Facade Schmidlin AG ECL Contracts Ltd.
WEATHER SEALING
The quality and optical appearance of a curtain wall are critically dependent on appropriate weather sealing. The facade elements are ultimately subject to extreme movements due to temperature changes, moisture (in the case of concrete), shrinkage of construction materials (wood, concrete), sound, wind and vibrations, which may affect the joints and adjacent elements. Natural stone elements request compatible non-staining solutions.

Recommended Sika products

Sikasil® WS-605 S
1-part silicone weather sealant, non-streaking on glass and metal surfaces, ASTM approved, CE marked

Sikasil® WS-305
1-part silicone weather sealant
For Europe: CE marked
For America, Asia, Middle East: ASTM approved

Sikasil® WS-355
1-part silicone weather sealant, non-staining on natural stone, ASTM approved, CE marked

SYSTEM BENEFITS
- Standard grades and specialties available
- Compatible with Sikasil® IG and SG grades
- Available in a great variety of colors
- Perfect color matching with grey Sikasil® SG and IG
- Sika® Spacer Tape and SikaGlaze IG-5 PIB

www.sika.com/ffi-ig

FIRE-RESISTANT FACADES
Sika’s fire-resistant weathersealant Sikasil®-670 Fire for curtain wall facades has been tested to BS476, part 20 with 4 hours fire resistance. The self-leveling version Sikasil® FS-665 SL has been optimized for floor joint applications. Sikacryl®-620 Fire completes the product range for interior application.

Recommended Sika products

Sikasil®-670 Fire
1-part silicone fire-retardant sealant, 4 hours fire-rated against BS 476-20, UL approved (2 hrs fire-rated)

Sikasil® FS-665 SL
1-part silicone fire-retardant sealant, self-leveling, suitable for wide floor joints, 4 hours fire-rated against BS 476-20, CE marked

Sikacryl®-620 Fire
1-part acrylic fire-retardant sealant, UL approved (2 hrs fire-rated), CE marked

SYSTEM BENEFITS
- Sikasil® fire retardant grades compatible
- with Sikasil® IG, SG and Sikasil® WS
- Third-party test reports available
www.sika.com/ffi-ws
SIKA FACADE, FENESTRATION, INSULATING GLASS - OVERVIEW

Weather Sealing and Fire Retardant Sealing
VAPOR PROOFING AND GLASS WALL GROUTING

WATER/VAPOR PROOFING
Depending on the climatic conditions both wet sealants (Sikasil® WS silicone or PU) or SikaMembran® Systems can be used for movement/connection joints and perimeter sealing around the facades and windows. SikaMembran® Systems are high-quality systems with optimized water/vapor diffusion resistance levels.

GLASS WALL GROUTING
In total vision glazing (TVG, fin glazing) and glass balustrades the glass panes should be fixed to the floor with low punctual stress transfer to the glass. With SikaForce®-335 GG the bottom glass edge is embedded in the floor, and thus results in uniform stress distribution. The PU embedding is protected against weathering by Sikasil® WS silicone sealants.

Recommended Sika products
SikaMembran® Universal, Outdoor Plus, Strong
EPDM based vapor control membrane system, CE marked

SikaBond® TF-Plus N
1-part PU membrane adhesive, compatible with SikaMembran®

SYSTEM BENEFITS
- Vapor control system suitable for almost all climatic conditions
- Available in 0.6 mm thickness for easy application
- Available in 1.2 mm thickness for high mechanical resistance

www.sika.com/ffi-membrane

Recommended Sika products
SikaForce®-335 GG
2-part self-levelling PU grout, compatible with PVB laminate

Sikasil® WS-605 S
1-part silicone weather sealant, compatible with PVB laminate, non-streaking on glass and metal surfaces

SYSTEM BENEFITS
- Stress-free embedding of glass balustrades
- Fast installation
- Compatible and durable solution

www.sika.com/ffi-glass-grout
top left:
5 Aldermanbury Square, London, 2005
Architect: Eric Parry Architects; Facade: Lindner-Schmidlin UK

bottom left:
Architects: David Walker Architects; Facade and balustrades: Josef Gartner

bottom right:
MahaNakhon, Bangkok, 2016
Architect: Office for Metropolitan Architecture OMA (NL)
Balustrades: by Peterson (TH)
The SikaTack® Panel system consists of an adhesive and prefixing tape and surface pretreatment agents. It can be used both for direct on-site bonding or factory prefabrication. Both technologies provide a great design freedom.

**SOUND DAMPING**
SikaDamp® and SikaGard® are efficient, easy-to-apply solutions to reduce the noise of structure-borne vibrations or external impacts (rain drops and hail grains) on metal and composite panels.

**SYSTEM BENEFITS**
- Efficient sound damping over wide range of temperature (-10 to +60°C)
- Easy to cut into tailor made pieces and to roll onto facade panels (SikaDamp®)
- Spray-on systems available (SikaGard®)

**Recommendation**
Sika supplies adhesives for the production of sandwich panels combining many kinds of materials for thermal insulation in the spandrel sections. Ask your Sika contact for SikaForce® system solutions.

---

**Recommended Sika products**

**SikaTack® Panel Adhesive**
1-part PU adhesive, high shear strength for heavy panels

**SikaTack® Panel-50 Adhesive**
1-part silicone adhesive, flexible at a wide range of temperature for most climatic conditions

**SikaTack® Panel Prefixing Tape**
double-sided self-adhesive fixing tape for initial fixing of facade panels

**SYSTEM BENEFITS**
- Economical for rapid fixing
- Uniform tension over the whole facade panel (no tress points)
- Resistant to weathering and ageing
- Vibration and movement absorbing fixing system
- Provides creative opportunities for facade design

www.sika.com/ffi-panel
right:  
**Lifelong Learning Centre Barking, UK**  
*Architect* Allford Hall Monaghan Morris  
*Facade* Cladding UK

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top left:  
**Office Building Zurich, 2012**  
*Facade* Shenyang YuanDa

---

bottom left:  
**Sony Ericsson UK HQ, Coventry**  
*Facade* ECL Contracts Ltd.
STRUCTURAL WINDOW BONDING

Window bonding is an innovative technology where the glass is directly bonded to the sash. The glass stiffens the sash and allows weight reduction of sash material and minimizing the sash width. All loads are uniformly transferred to the sash by replacing the setting blocks by an adhesive applied on all four sides. This minimizes the risk of glass breakage.

Recommended Sika products

Sikasil® WT-470, WT-480, WT-485
2-part silicone adhesives, UV-resistant, with various curing speeds, suitable for manual up to fully automated application

Sikasil® WT-65
1-part silicone adhesive, easy to apply

Sikasil® WT-66 PowerCure
1-part silicone adhesive, easy to apply, accelerated curing

SikaFast®-500 series
2-part acrylates, extremely high modulus, extremely fast curing

Sika® Glazing Tape Prefix
Acrylic adhesive tape, immediate fixation of glass

SYSTEM BENEFITS

- Improvement of thermal insulation
- Increase of approved wind load
- Reduction of production costs
- Reduction of service costs
- Up to 90% lower complaint rate

www.sika.com/windows

WINDOW INSTALLATION

For high performing windows it is crucial to have these windows installed in line with the latest standards for energy efficient window installation such as, e.g., RAL installation guidelines in Germany. Sika offers the appropriate products.

Recommended Sika products

SikaMembran® Window Outside; Window Inside
Vapor permeable, resp. vapor proof, flexible, membrane for air, wind and rain tight window installation, double-side fleece backing for optional over rendering

Sika® ExpansionTape-100; Sika® ExpansionTape-600
Expansion tape for noise and thermal insulation between frame and adjacent construction, high initial adhesive strength for easy installation, ExpansionTape-600 is CE certified (ETA-07/0072)

Sika® WindowTape One
One expansion tape for the whole window installation, suitable for “passive-house” standards, fulfills energy conservation regulations (EnEV) and RAL guidelines
left:
Leutschentower, Zurich, Switzerland, 2011
Architect Betrix Consolacio, Architekten AG, Zurich
Window manufacturer Baumgartner AG
Window type Wood/aluminum with opening lights bonded with SikaFast® 5201 NT

top right:
D4 Center Z5, Root, Switzerland, 2011
Architect Scheitlin-Syfrig Architekten, Lucerne
Window manufacturer 1a hunkeler AG
Window type Wood/aluminum bonded with Sikasil® WT-40

bottom right:
Single-family home in Swabian Alps, Germany
Window manufacturer Walch
Window type Wood with stepped insulating glass bonded with Sikasil® WT-470
SIKA FACADE TECHNOLOGIES

BONDING TECHNOLOGIES

Structural glazing and insulating glass edge sealing
Sikasil® SG and Sikasil® IG: high-modulus silicone technology for UV-resistant glass bonding and IG edge sealing.

Panel bonding
SikaTack® Panel System: high-strength PU and silicone technologies for stress-free bonding of opaque facade panels.

Panel lamination
SikaForce®: PU adhesives for production of sandwich panels.

Panel reinforcement (panel strengthening)
SikaBond®, SikaFast®, SikaPower®, Sikasil® SG: various products for different bonding technologies for an efficient reinforcement of facade panels and claddings.

Structural window bonding
Sikasil® WT, SikaFast®, Sikaflex®: various products for structural strengthening of window sashes by direct bonding of IG units to the sash made of any kind of material.

SEALING TECHNOLOGIES

Wet joint sealing
Sikasil® WS weather sealant range comprises of specialized low-modulus silicones for glass, metals, natural stones and plastics and the high-end PU and PU-hybrid sealants for movement and connection joints preferably on porous substrates.

Joint membranes
SikaMembran® Systems: the flexible high-quality membranes for joint sealing and vapor proofing in line with the highest requirements of construction physics.

FURTHER TECHNOLOGIES

Glass wall grouting
SikaForce® GG: high-strength, self-levelling PU systems for embedding glass panes of glass walls and balustrades.

Sound damping
SikaDamp®: sound damping butyl sheet for roll-on application, SikaGard®: spray-on sound damping solution.

Anchoring
Sika® AnchorFix®: the high-strength and fast-curing solution for chemical anchoring.
OUR PERFORMANCE – YOUR BENEFITS

PERFORMANCE

Construction consultancy
- Review and consultancy of facade and window systems with regard to suitability for bonding
- Advice on system improvements i.e. material choice or dimensioning

Functional testing
- Support with prototyping
- Functional tests / test plan of entire system for compatibility, adhesion and function

Application technology
- Active consulting, including the selection of right application technology
- Assist in system and equipment engineering / bonding technology
- Support with application and quality procedures

Applicator training
- Preparation of operating manuals for bonding in conformity with ISO
- Factory and on-site training of applicators

External approvals
- Best practice sample preparation

Online project management
- Easy-to-use online platform www.sika-bonding-excellence.com
- Always up-to-date by effective project tracking with realtime visualization of each step of project progress in the workflow.

BENEFITS

OUR CORE COMPETENCE - FROM DESIGN TO PROCESS

Sika develops bonding and sealing solutions in close cooperation with its customers in the facade and window industry. To Sika, this means not only developing best-in-class technology solutions to match the customer’s technical and commercial requirements, but also ensuring appropriate performance throughout the design, prototyping, validation and full production phases. Experts in Sika’s R&D, Technical Service and System Engineering specialize in devising unique client-oriented solutions.

DESIGN AND SYSTEM ENGINEERING

Application oriented adhesives and sealants, as well as innovative construction methods are currently in high demand, which calls for design and application support. At Sika Facade and Fenestration Competence Centres, the most suitable solutions are developed in partnership with our customers to achieve the targeted results. Ultimately, this means reduced production costs, greater product reliability, improved aesthetic appeal and faster turn-around times, adding value to the activities of Sika customers.

TECHNICAL SERVICE

Sika Technical Service teams are located around the world, and are dedicated to providing best practice selection, validation and application of Sika materials. Being located close to our customers, Technical Department of Sika Industry provides fast and reliable project tests based on international or local standards. In comprehensive training sessions in local language Sika can assure optimum communication and understanding for the appropriate product application. Furthermore, Sika supports the build-up of proper QA/QC procedures and systems complying with relevant standards.
GLOBAL BUT LOCAL PARTNERSHIP

FOR MORE INFORMATION:

For more literature about Sika Facade and Fenestration solutions browse:
www.sika.com/ffi-downloads

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika’s product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, flooring as well as roofing and waterproofing systems.

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