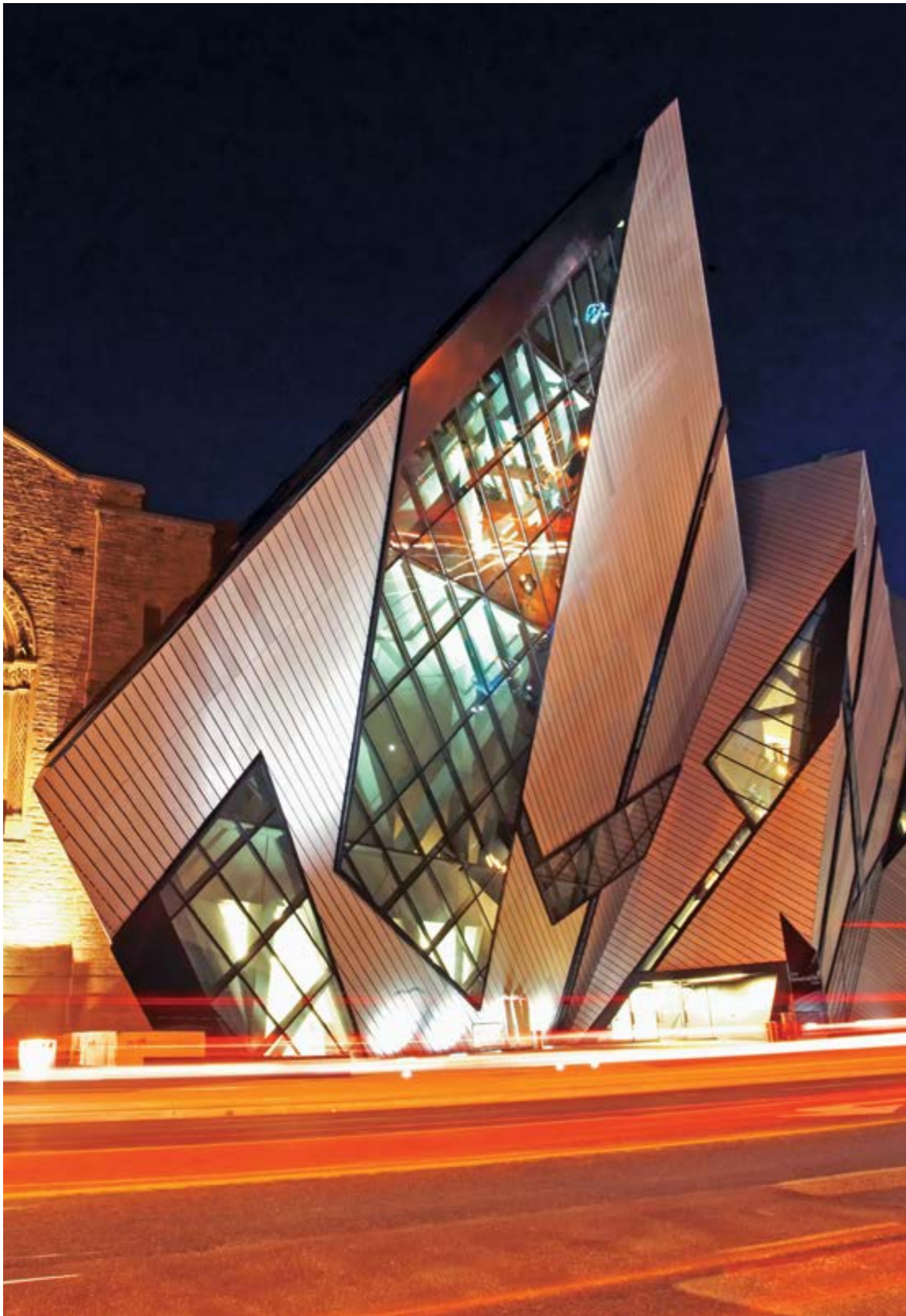




SIKA FFI SEALING AND BONDING IN FAÇADE AND FENESTRATION



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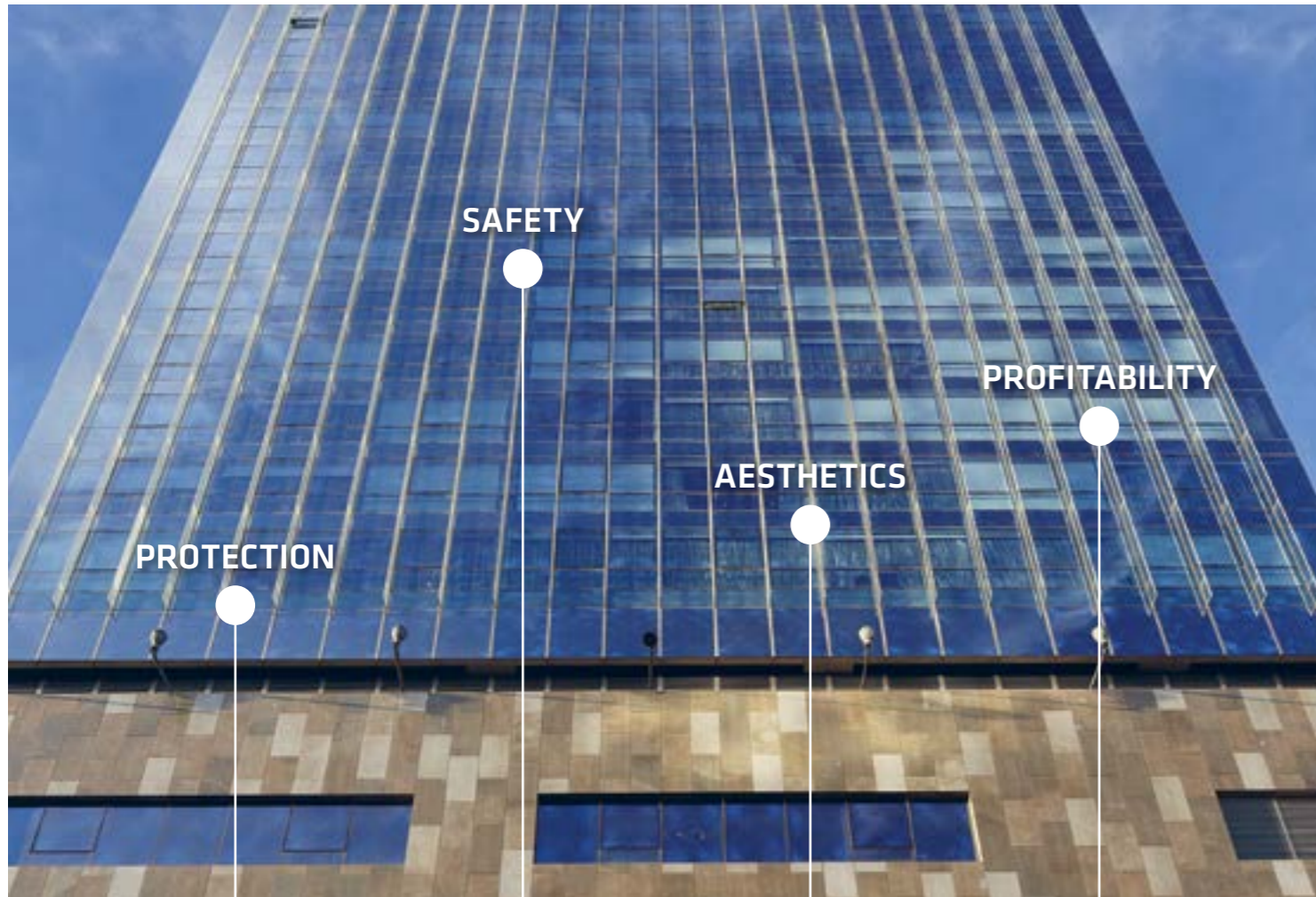
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left:
Royal Ontario Museum, Toronto
Extension Michael Lee-Chin Crystal
Architects Studio Daniel Libeskind; **Façade** Josef Gartner

BUILDING ENVELOPE



Protection against heat, cold, wind, rain, humidity, noise

Safety for burglary resistance, fire protection, bomb blast resistance

Aesthetics by design freedom, choice of materials, non-staining

Profitability because of durability of materials, energy saving, low maintenance cost

FAÇADE AND WINDOWS

The building envelope design is a central part of the building's planning process. The façade 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 façade 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 façade and window construction.

Sika continues to develop new products and systems for sealing and bonding façades 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.

FAÇADES

CURTAIN WALL FAÇADE

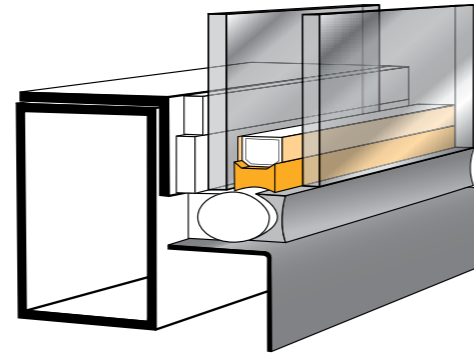
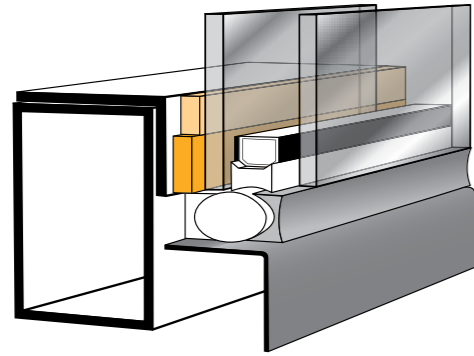
A curtain wall façade is a lightweight multifunctional building envelope made of glass (single- or multi-pane units), metal, stone or composite panels. These panels are fixed to a metal subframe, either with pressure plates (capped systems) or bonded with silicone adhesive sealants (structural glazing). This system is mechanically fixed to the main building structure. Curtain wall façades are the state-of-the-art technology for high-rise buildings.

VENTILATED FAÇADE

Ventilated façades 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 façade. 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 GLAZING AND INSULATING GLASS



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.

Recommended Sika products

Sikasil® SG-550 – 2-part structural glazing adhesive, very high mechanical strength, design factor σ_{dyn} 0.20 MPa, ASTM and ETAG approved, CE marked

Sikasil® SG-500 – 2-part structural glazing adhesive, cartridge solution for onsite repair available, ETAG approved, CE marked

Sikasil® SG-500 CN – 2-part structural glazing adhesive, cartridge solution for onsite repair available, ASTM approved

Sikasil® SG-20 – 1-part structural glazing adhesive, high mechanical strength and movement capability, design factor σ_{dyn} 0.17 MPa, ETAG approved, CE marked

Sikasil® SG-18 – 1-part structural glazing adhesive, ASTM approved

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 façade technology

www.sika.com/ffi-sg

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

Sikasil® IG-25 HM Plus – 2-part silicone insulating glass secondary seal, design factor σ_{dyn} 0.19 MPa, suitable for air- and gas-filled IG units, EN1279-2 and -3 and ETAG approved, CE marked

Sikasil® IG-25 – 2-part silicone insulating glass secondary seal, EN-1279-2 and ETAG approved, CE marked

SikaGlaze® IG-5 PIB – Butyl insulating glass primary seal, suitable for air- and gas-filled IG units, EN-1279-2 and -3 approved

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

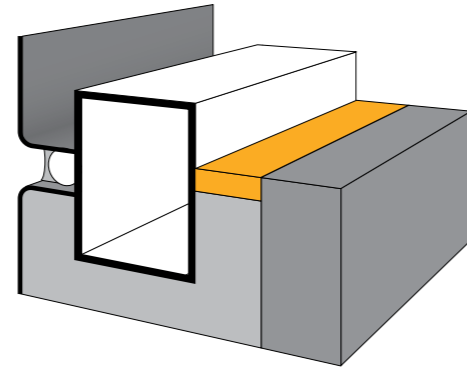
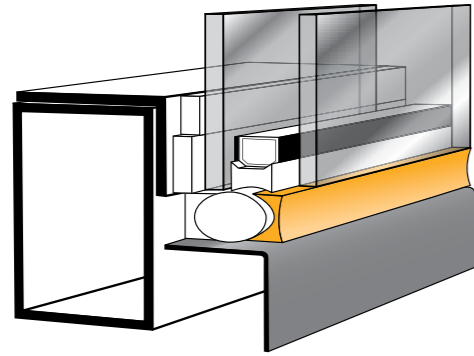


left:
Hotel W, Barcelona, 2006
Architects Ricardo Bofill; Façade UTE Facadas

top right:
Torre Puig, Barcelona, 2013
Architects Rafael Moneo, Lucho Marcial; Façade Permasteelisa Spain.
First European project with Sikasil® SG-550

bottom right:
30 St Mary Axe, (Swiss Re), London, 2004
Architects Foster & Partners; Façade Schmidlin AG ECL Contracts Ltd.

WEATHER SEALING AND FIRE RETARDANT SEALING



WEATHER SEALING

The quality and optical appearance of a curtain wall are critically dependent on appropriate weather sealing. The façade 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

Sikasil® WS-305 CN

1-part silicone weather sealant, ASTM approved

Sikasil® WS-355

1-part silicone weather sealant, non-staining on natural stone, ASTM approved

Sikasil® WS-680 SC

1-part hybrid weather sealant, suitable for self-cleaning glass

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-ws

FIRE-RESISTANT FAÇADES

Sika's fire-resistant weathersealant Sikasil® FS-665 for curtain wall façades has been tested to BS476, part 20 with 4 hours fire resistance. The self-levelling version Sikasil® FS-665 SL has been optimized for floor joint applications. Sikacryl® FS-265 completes the product range for interior application.

Recommended Sika products

Sikasil® FS-665

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-levelling, suitable for wide floor joints, 4 hours fire-rated against BS 476-20

Sikacryl® FS-265

1-part acrylic fire-retardant sealant, UL approved (2 hrs fire-rated)

SYSTEM BENEFITS

- Sikasil® FS grades compatible with Sikasil® IG, SG and WS
- Third-party test reports available

www.sika.com/ffi-fire



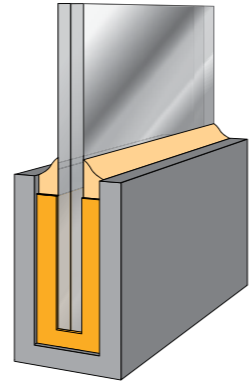
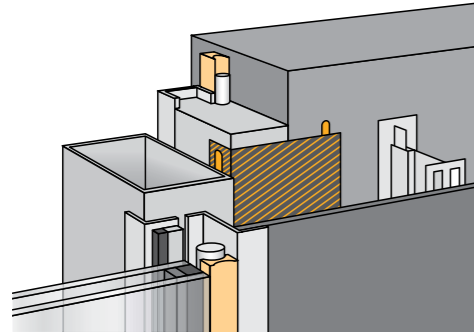
top left:
Axiata Centre (Quill 7), Kuala Lumpur Sentral, 2009
Architects Micheal Ong Chartered Architect; Façade CML Sdn Bhd

top right:
Pangu Plaza, Beijing, 2008
Architects C.Y. Lee & Partners; Façade Shanghai Huayi

bottom:
CNOOC Building, Beijing, 2005
Architects Kohn Pedersen Fox Associates PC; Façade Josef Gartner



VAPOR PROOFING AND GLASS WALL GROUTING



WATER/VAPOR PROOFING

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

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

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 SikaGlaze® GG-735 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

SikaGlaze® GG-735
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



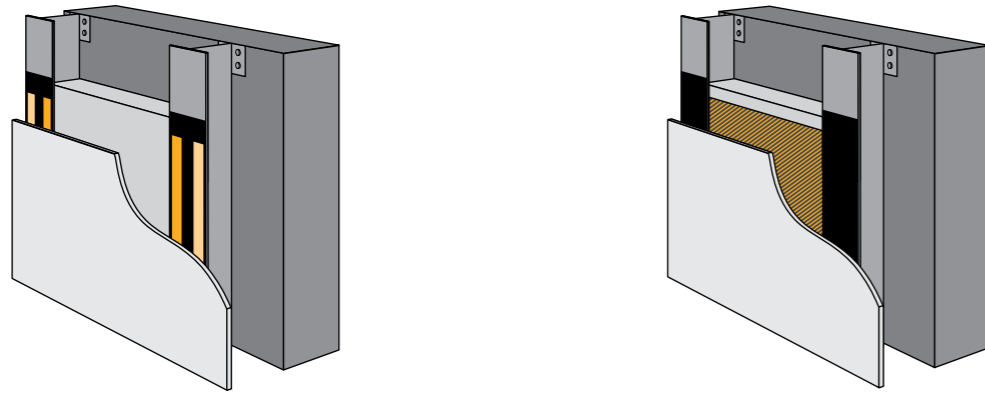
top left:
5 Aldermanbury Square, London, 2005
Architect Eric Parry Architects; Façade Lindner-Schmidlin UK

bottom left:
Riverbank House, London, 2011
Architects David Walker Architects; Façade and balustrades Josef Gartner

bottom right:
ADIA, Abu Dhabi, 2004
Architects Kohn Pederson Fox Associates Façade Schmidlin AG (CH)



OPAQUE FAÇADES



PANEL BONDING

The SikaTack® Panel system consists of an adhesive and prefiling 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.

Recommended Sika products

SikaTack® Panel Adhesive

1-part PU adhesive, high shear strength for heavy panels

SikaTack® Panel Prefiling Tape

double-sided self-adhesive fixing tape for initial fixing of façade panels

SYSTEM BENEFITS

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

www.sika.com/ffi-panel

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.

Recommended Sika products

SikaDamp®-620

Elastomer rolls equipped with a thin aluminum flashing

SikaGard®-6682

1-part acrylate based sound damping dispersion for spray application

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 façade panels (SikaDamp®)
- Spray-on systems available (SikaGard®)

PANEL LAMINATION

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.

www.sika.com/ffi-sound

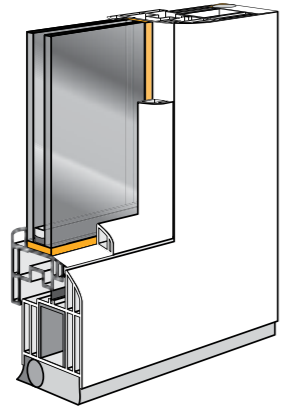
right:
Lifelong Learning Centre Barking, UK
Architect Allford Hall Monaghan Morris; Façade Cladding UK

top left:
Office Building Zurich, 2012
Façade Shenyang YuanDa

bottom left:
Sony Ericsson UK HQ, Coventry
Façade ECL Contracts Ltd.



WINDOWS



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-485

2-part silicone adhesive, UV-resistant, high curing speed for automated application

Sikasil® WT-480

2-part silicone adhesive, high modulus, long mixer open time

Sikasil® WT-470

2-part silicone adhesive, highly flexible, medium curing speed

Sikasil® WT-40

1-part silicone adhesive, easy to apply

SikaFast®-5000 series

2 part acrylates, extremely high modulus, extremely fast curing

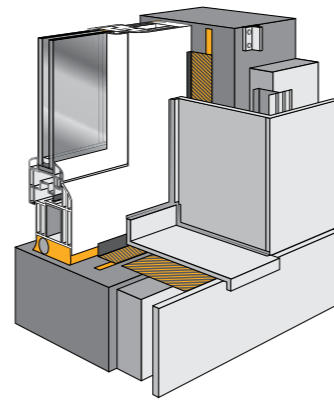
Sika® Glazing Tape Prefix

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, fulfils energy conservation regulations (EnEV) and RAL guidelines



left:
Leutschentower, Zurich, Switzerland, 2011
Architect Bétrix Consolascio; 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 FAÇADE 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: the high-strength PU technology for stress-free bonding of opaque façade 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 façade 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: the specialized low-modulus silicones for glass, metals, natural stones and plastics. Sikaflex®: 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
SikaGlaze® 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.



top:
California Academy of Science, Exhibition and Research Center, San Francisco, 2008
Architects Renzo Piano Building Workshop; Façade Josef Gartner

left:
Cloud Nine Plaza, Shanghai, 2006
Architects Arquitectonica, USA; Façade Shanghai Meite



OUR PERFORMANCE – YOUR BENEFITS

PERFORMANCE

Construction consultancy

BENEFITS

- Review and consultancy of façade 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



OUR CORE COMPETENCE - FROM DESIGN TO PROCESS

Sika develops bonding and sealing solutions in close cooperation with its customers in the façade 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 FFI 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. By being located close to our customers, Sika Technical Service provides fast and reliable project tests based on international or local standards and can assure optimum local language communication and understanding throughout the technical application development process to ensure the best possible results.

left:
International Finance and Economy Centre, Beijing, 2007
 Architects Rocco Design Ltd., Hong Kong; Façade Shenyang YuanDa

SIKA FULL RANGE SOLUTIONS FOR CONSTRUCTION:



WATERPROOFING



CONCRETE



REFURBISHMENT



MERCHANT



SEALING AND BONDING



FLOORING



ROOFING



INDUSTRY

FOR MORE FURTHER INFORMATION:



WHO WE ARE

Sika Limited and Sika Ireland Limited are part of the global Sika Group, specialising in the manufacture and supply of chemical based products for construction and industry. Sika is a world-leader in its field with subsidiaries in more than 80 countries, 15,200 employees, and annual sales of CHF 5.1 billion (£3.4bn). We are also committed to providing quality, service, safety and environmental care.

In the UK and Ireland, we provide market-leading solutions for concrete, waterproofing, roofing, flooring, refurbishment, sealing & bonding, and industry, and have manufacturing sites in Welwyn Garden City, Preston, Leeds and Dublin with more than 700 employees and a turnover of more than £190 million.

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. 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 written 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.



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BUILDING TRUST

