Sika
Worldwide

Sika is a globally active company supplying the specialty chemicals markets. It is a leader in processing materials used in sealing, bonding, damping, reinforcing and protecting load-bearing structures in construction (buildings and infrastructure construction) and in industry (vehicle, building component and equipment production).

Sika's product lines feature high-quality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring and membranes. Subsidiaries in more than 74 countries worldwide and approximately 13,500 employees link customers directly to Sika.

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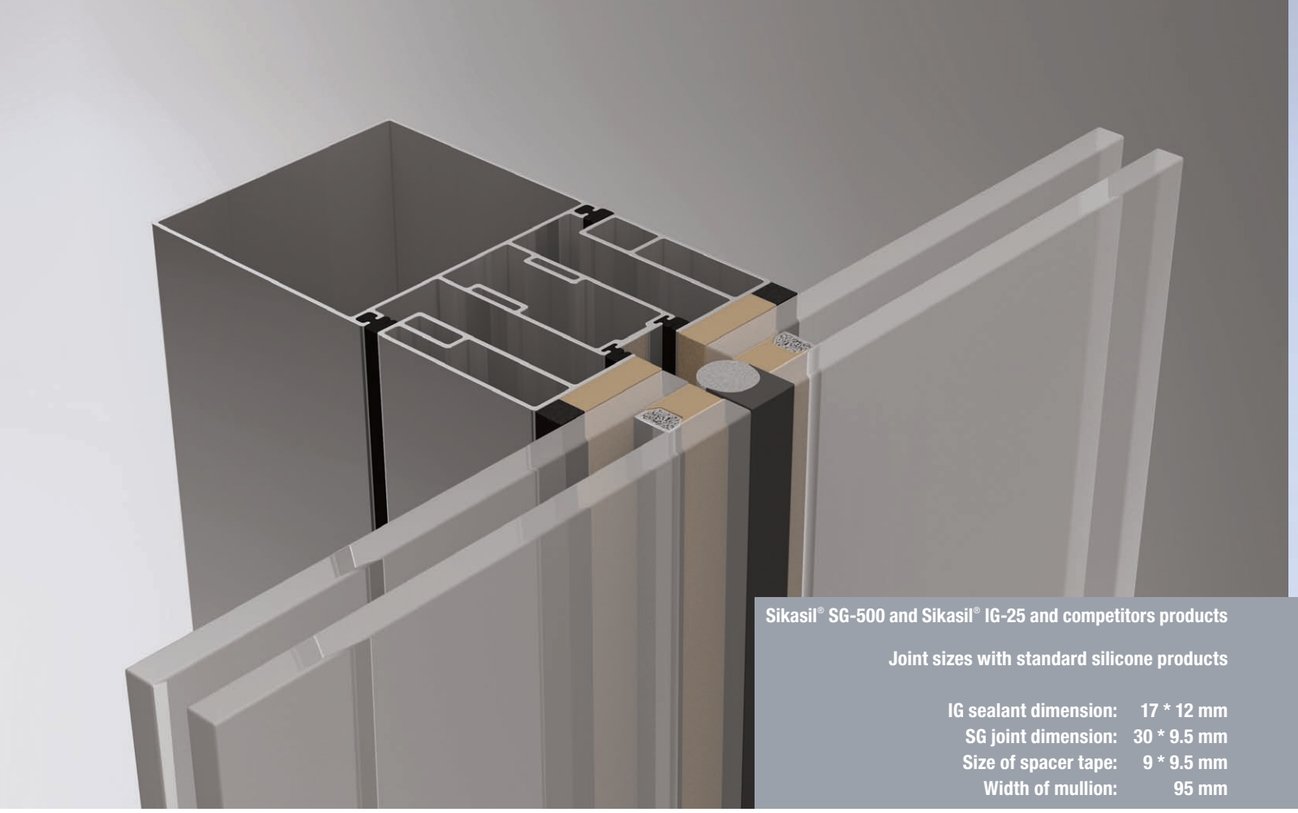
Innovation & Consistency | since 1910

12/2011

Sika FFI
High-Strength Structural Glazing – Two New Stars are Born

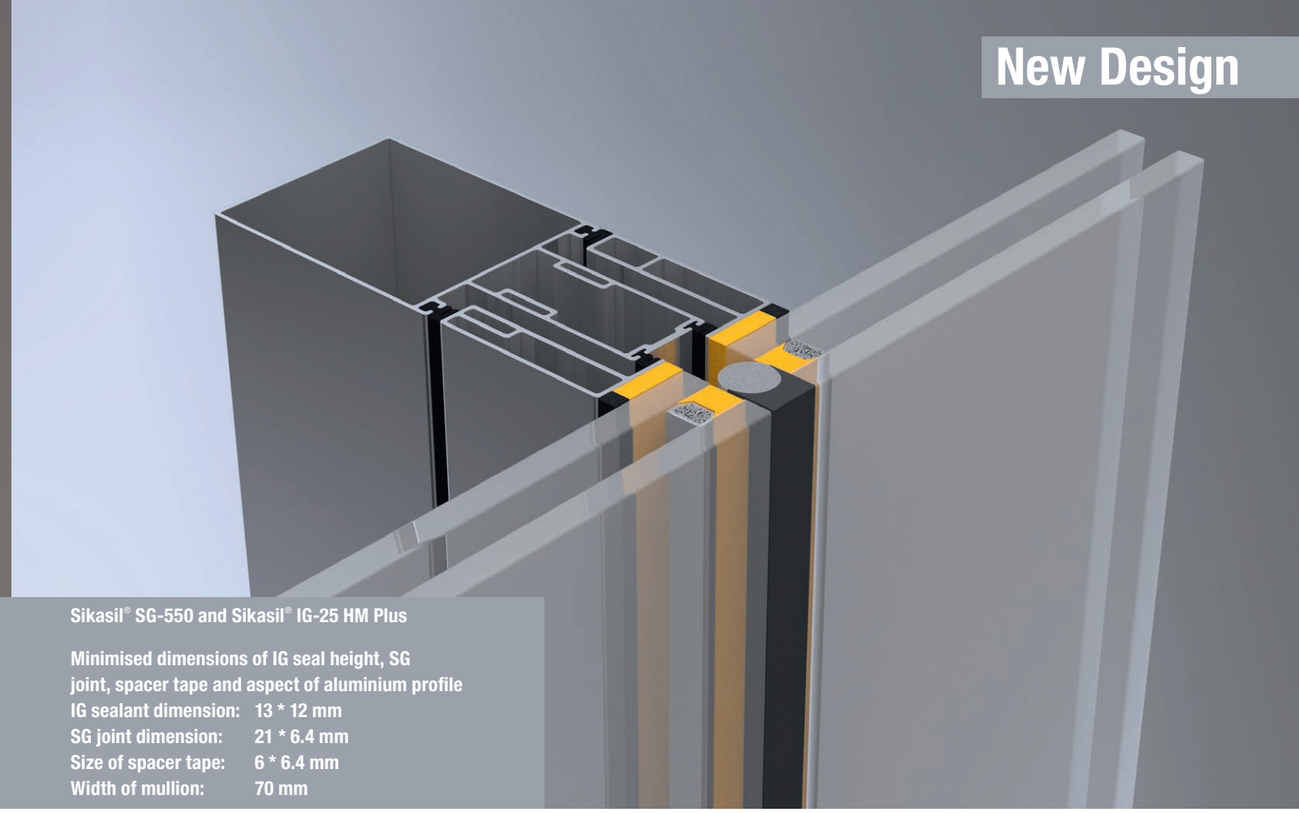
Innovation & Consistency | since 1910



Sikasil® SG-500 and Sikasil® IG-25 and competitors products

Joint sizes with standard silicone products

IG sealant dimension:	17 * 12 mm
SG joint dimension:	30 * 9.5 mm
Size of spacer tape:	9 * 9.5 mm
Width of mullion:	95 mm



Sikasil® SG-550 and Sikasil® IG-25 HM Plus

Minimised dimensions of IG seal height, SG joint, spacer tape and aspect of aluminium profile

IG sealant dimension:	13 * 12 mm
SG joint dimension:	21 * 6.4 mm
Size of spacer tape:	6 * 6.4 mm
Width of mullion:	70 mm

Sikasil® SG-550 and Sikasil® IG-25 HM Plus
Highest Design Strength – Smallest Joints

Since the beginning of structural glazing for most of the silicone adhesives the design strength has been fixed at 0.14 N/mm². This started to change in 2006 when the design strength of Sikasil® SG-20 was rated with 0.17 N/mm².

Now Sika presents two innovations with a mechanical strength outperforming all existing insulating glass and structural glazing silicone adhesives. In the latest ETA approvals issued in November 2011 the IG secondary edge seal Sikasil® IG-25 HM Plus has been evaluated with 0.19 N/mm². The structural glazing adhesive Sikasil® SG-550 is even rated with unmatched 0.20 N/mm². With almost 90% elongation at break it can accommodate high movements in the SG modules.

The figures on the right demonstrate impressively the improvements compared to standard silicone products on the market.

Material savings in all details

The higher strength of the adhesives has an enormous saving impact on the material consumptions:

For a project with a wind load of 5 kPa and glass dimensions of 1.6 x 3.5 m we have calculated the savings:

- **SG joint: 60%**
- **IG joint: 23%**
- **Spacer tape: 55%**
- **Aluminium: ~8%**

More details and sizes are visualised in the drawings above.

Let the sun shine in

Modern architecture is light and transparent. It requests filigree frames in light weight aluminium constructions for large airport and sports hall facades or wide-spanning glass roofs.

In the sample above the aluminium aspects have been reduced by 25%. The slimmer the frames the more transparent is the facade, the higher is the solar heat gain.

Sustainability all-over!

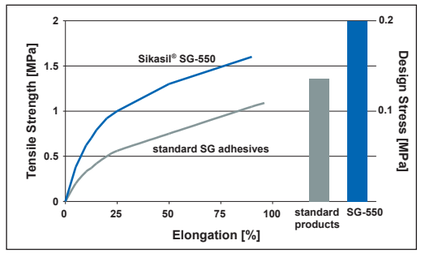
Sikasil® IG-25 HM Plus

- Two-part silicone secondary edge seal for air- and argon-filled IG units in SG facades
- Outstanding processing properties (dosing and tooling)
- Extremely high mechanical strength
  Tensile strength: 1.4 N/mm²
  Design tensile strength σ_{dyn}: 0.19 N/mm²
  Design shear strength τ_{stat}: 0.011 N/mm²
- Excellent weathering and UV resistance
- Complies with ETAG 002 and EN13022, ETA approved (ETA 11/0391) and CE-marked for black and grey

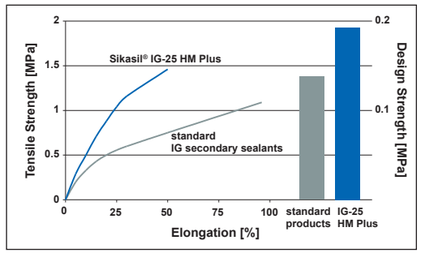
Sikasil® SG-550

- Two-part structural glazing silicone adhesive
- Good processing properties on hydraulic pump systems, e.g. Reinhard Technik Ecostar 250, Lisec TAL 50 and TAL 60, TSI Mastermix XL and XS, DOPAG VISCO-MIX H200; pneumatic pumps are not suitable
- Extremely high mechanical strength
  Tensile strength: 1.6 N/mm²
  Design tensile strength σ_{dyn}: 0.20 N/mm²
  Design shear strength τ_{stat}: 0.013 N/mm²
- Excellent weathering and UV resistance
- Complies with ASTM C1184, ASTM C920, class 12.5, ETAG 002 and EN15434, ETA approved (ETA 11/0392) and CE-marked

Sikasil® IG-25 HM Plus
Lowest Argon Loss Rates



Comparison of stress-strain curve and design strength of Sikasil® SG-550 with standard SG adhesives



Comparison of stress-strain curve and design strength of Sikasil® IG-25 HM Plus with standard IG products

Argon-filled IG units have not been used in SG facades for many years. Hence structural facades were supposed to be banned for colder climates, due to ever stricter energy saving regulations.

With the development of the high-modulus IG secondary edge seal Sikasil® IG-25 HM Plus the glass panes in IG units are very tightly held together. Movements in the butyl layers, caused by temperature and pressure changes, are minimised. As a consequence leakages in the butyl primary seal, the main barriers against argon penetration, are prevented.

In tests complying with the European IG standard EN 1279-3 the best test units have proven an annual argon loss rate as low as 0.3%. The maximal limit in the standard is set with 1% per year.

Energy saving for more than 30 years

With the argon loss rate of 0.5% per year, in average achieved at the European IG tests, after 30 years there is still an argon content of 80% to be expected in the IG cavity.

Even after 30 years the energy transfer coefficient of IG unit (U_g value) has only increased by less than 0.1 W/m²K.

This means that for the whole service life of a glass facade the high energy performance of the argon-filled insulating glass units remains almost unchanged.

Sustainability all-over!