



SIKA FFI LAMINAR GLASS BONDING

VISIBLE ELEGANCE FOR OPAQUE PANELS

**BUILDING TRUST
CONSTRUIRE LA CONFIANCE**



LAMINAR GLASS BONDING – SIMPLE, EFFICIENT AND SAFE

AN INNOVATIVE WAY OF AFFIXING GLASS

Glass in overhead applications is most often laminated and requires either visible point fixings or continuous edge support, both of which may perturb the uniform glass surface envisioned by the architect. In response, Sika and sedak together developed a novel laminated composite system which combines a monolithic glass panel, a layer of self-levelling silicone adhesive – Sikasil® GS-687 – and a load transferring perforated metal panel.

Utilizing this laminar silicone system has made it possible to install glass in overhead situations as well as in vertical details (e.g. spandrels and glass walls) without any visible mechanical fixings, thus creating large, even, opaque glass surfaces. Furthermore, this system, in a recent project, made it possible to achieve a weight reduction of 30 % when a PVB-laminated safety glass system composed of 2 x 12 mm thicknesses was replaced by a laminar composition system comprising a 10 mm thick glass panel, a 6 mm thick layer of silicone and a 3 mm thick aluminum back sheet.

Sikasil® GS-687

- Two-part self-levelling silicone adhesive
- Outstanding processing properties with piston and gear pumps
- Easily colorable or applicable on coloured enamel coatings
- Excellent UV- and weathering-resistance
- Nearly unchanged mechanical strength over a wide range of temperatures
- Almost unchanged adhesive strength up to 150 °C in applications with dark panels
- Excellent post-breakage behaviour
- Durability tested against EOTA ETAG No 002 (2012), ASTM C 1184 and ASTM C 920
- Consumption: 3-6 litre/m² (3-6 mm layer thickness)

POST-BREAKAGE BEHAVIOUR

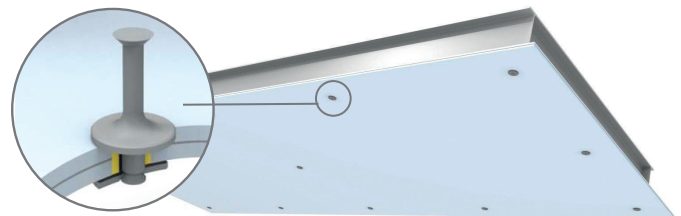
Due to diminished performance at higher temperatures and under long-term loading, the residual strength of a PVB-laminated glass unit is limited. As silicones' mechanical and adhesion properties are almost unchanged over a wide temperature range, from -40 to +150 °C, the laminar panels show excellent post-breakage behaviour. The metal back sheets, additionally, reinforce the composition.

ADVANTAGES

- Visual benefits
 - No visible mechanical fixings
 - Glossy appearance of spandrels - like vision glass
 - Uniform deflection pattern of glass panel
- Uniform stress distribution
- Excellent post-breakage behaviour
- Material savings and weight reduction (up to 30 %)
- Energy savings for glass tempering and laminating

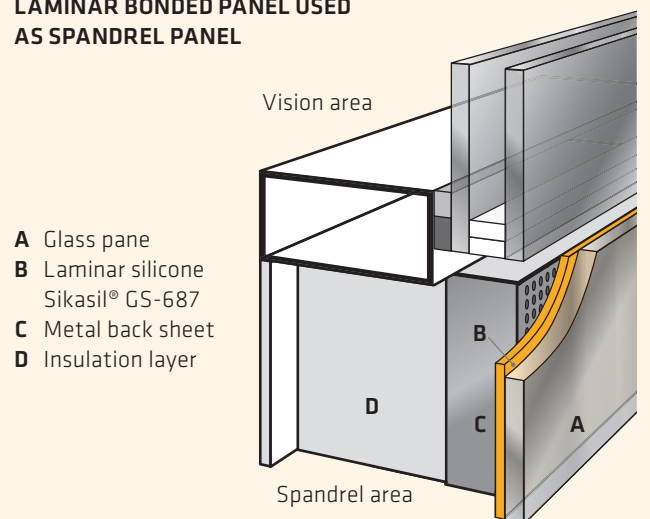


New Construction: Uniform glass panel with laminar bonding
(© sedak)



Conventional Construction: Glass panel with visible metal fittings (© sedak)

LAMINAR BONDED PANEL USED AS SPANDREL PANEL



PRODUCTION OF LAMINAR PANELS

Application of Sikasil® GS-687 can be adapted to panel size and speed of production. It ranges from manual mixing and application (1) to semi-automated scale-up (2).

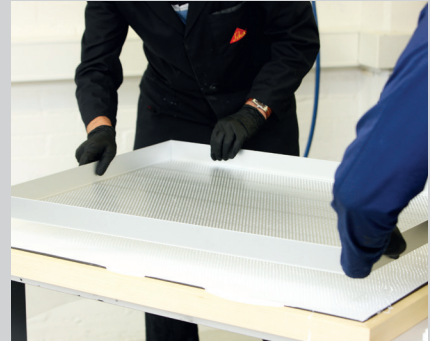
1. MANUAL MIXING IN SMALL-SCALE PRODUCTION OF SPANDREL PANELS



Manual mixing of 2-part Sikasil® GS 687 with cone agitator

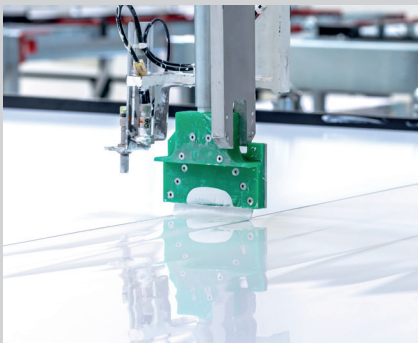


Silicone application



Embedding metal back sheet

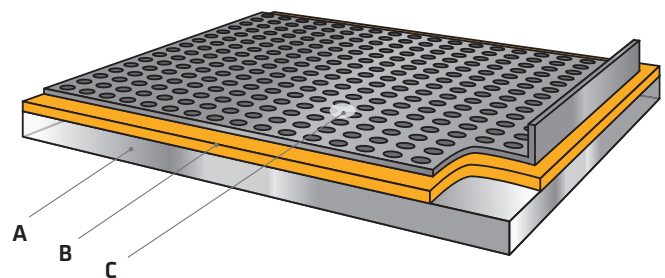
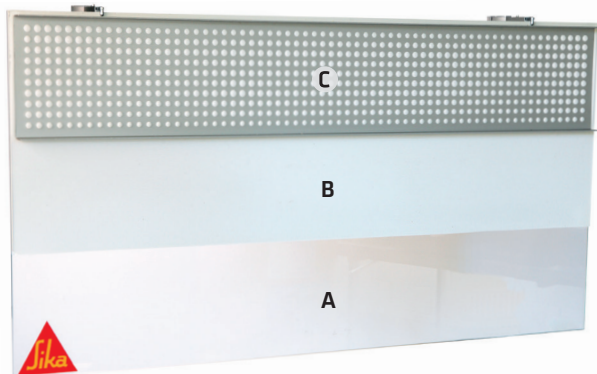
2. MACHINE MIXING AND APPLICATION



Further scale-up steps may be required for machine-mixing of Sikasil® GS-687 with gear or piston pumps.

Large panels up to 14 x 3.2 m, for a mega project in the USA, are produced by sedak GmbH & Co KG, Gersthofen, Germany with a semi-automated machine which applies the Sikasil® GS-687 and attaches the metal back-sheets.

PRINCIPLE OF LAMINAR SPANDREL CONSTRUCTION



A - Glass pane; **B** - Laminar silicone Sikasil® GS-687; **C** - Metal back-sheet

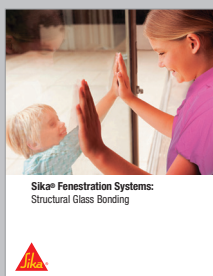
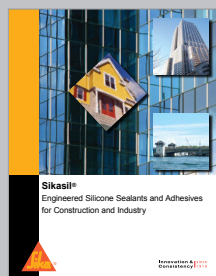
SIKA WORLDWIDE



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.

Also Available:



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

*Machine application and front cover photographs:
René Müller Photographie/sedak*

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