

**Product Data Sheet**  
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Sikasil® SG-500

## Sikasil® SG-500

### High-Performance 2-Part Silicone Sealant and Adhesive for Glass Facades

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#### Product Description

Sikasil® SG-500 is a neutral, 2-part, condensation-curing, elastic silicone adhesive with high mechanical strength and excellent adhesion to many construction materials such as glass and metal.

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#### Uses

Sikasil® SG-500 is a professional silicone adhesive designed for sealing, bonding and mending in construction applications. It is universally applicable for the structural bonding of façade elements. Sikasil® SG-500 is particularly suitable for bonding glass and metal in structural glazing structures and as high-quality edge sealant for multipane insulation glazing.

The two parts component A (base compound) and component B (catalyst paste) must be mixed, and cure at room temperature to form an elastomer.

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#### Characteristics / Advantages

- Neutral curing system: odourless
- Solventless
- Non-sag
- Ready gunnability at low (+5°C) and high (+40°C) temperatures
- Very low shrinkage on curing
- After cure: elastic at low (-40°C) and high (+150°C) temperatures
- Excellent adhesion on most float, tinted and coated glasses and to plastic and metal spacers
- Excellent resistance to water and the effects of moisture
- Excellent UV- and weathering resistance
- Highly load-resistant
- Abrasion resistant
- Not corrosive to metals and many plastics
- Compatible with PVB layer of safety glasses
- Compatible with alkaline materials, such as concrete, fibrous cement, etc.
- Free of abrasive fillers
- External quality control
- Long shelf-life: simplified stockkeeping

Industry



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## Tests

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<b>Approvals / Standards</b>	<p>DIN 1286-1: Insulating glass units; air filled; aging behaviour.</p> <p>EOTA ETAG No. 002 - 1998: European technical approval guidelines for structural sealant glazing systems</p> <ol style="list-style-type: none"><li>1. For glass-metal bonds to anodized aluminium, powder-coated aluminium and stainless steel</li><li>2. For glass-glass bonds</li><li>3. For repair of elements originally bonded with SG-500</li><li>4. For bonding to glass coated with Sikasil® IG-25 (e.g. in the case of stepped insulation glass)</li></ol> <p>European Technical Approval ETA-03/0038: Structural sealant for use in structural sealant glazing systems.</p> <p>ASTM C920: Elastic joint sealants: Type M, Grade NS, Class 25, Use NT, G, A and M.</p> <p>TT-S-001543 A: Sealing compound: silicone rubber base (for caulking, sealing and glazing in buildings and other structures). Class B - compounds resistant to 25% maximum total joint movement.</p> <p>TT-S-00230 C: Sealing compound: elastomeric type, multi-component (for caulking, sealing and glazing in buildings and other structures), type II, class A.</p> <p>ASTM C1135: Standard test method for determining tensile adhesion properties of structural sealants.</p> <p>ASTM C1184: Standard Specification for Structural Silicone Sealants.</p> <p>GB16776 - 1997: Chinese approval for structural glazing silicone sealants.</p> <p>SNJF-VEC: Approval for structural glazing silicone sealants.</p>
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## Product Data

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### Form

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<b>Colour</b>	<p>Sikasil® SG-500 is available in black.</p> <p>Colour Component A: creamy white Colour Component B: black</p>
<b>Packaging</b>	<p>Component A: 200 l drum: 260 kg, 187.1 litres Component B: 20 l pail: 20 kg, 18.5 litres</p> <p>Other types of packaging can be supplied on request. The product can be applied by almost all industrial dispensing equipment.</p>

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### Storage

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<b>Storage Conditions / Shelf Life</b>	15 months from date of production if stored in undamaged original sealed containers, in dry conditions at temperatures between +5°C and +25°C.
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### Technical Data

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<b>Chemical Base</b>	2-part silicone, condensation-curing
<b>Density</b>	<p><i>Unmixed Components A (base compound) and B (catalyst paste)</i></p> <p>~ 1.39 kg/l (Comp. A) (ISO 1183-B) ~ 1.08 kg/l (Comp. B)</p> <p><i>Uncured mixture of base compound and catalyst paste in weight ratio 13 : 1 or volume ratio 10 : 1</i></p> <p>~ 1.37 kg/l (ISO 1183-B)</p>

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<b>Movement Capability</b>	<i>Cured rubber (after 2 weeks at +23°C / 50% r.h.)</i> ± 12.5% 25%	(ISO 9047) (ASTM C920)
<b>Viscosity</b>	<i>Unmixed components A (base compound) and B (catalyst paste)</i> 1'100'000 mPas (Comp. A) (+23°C / D = 0.85 s <sup>-1</sup> ) 150'000 mPas (Comp. B) (+23°C / D = 0.85 s <sup>-1</sup> )	
<b>Extrusion Rate</b>	<i>Uncured mixture of base compound and catalyst paste in weight ratio 13 : 1 or volume ratio 10 : 1</i> 8 ml/10 s at +23°C (3 mm nozzle, p = 0.21 N/mm <sup>2</sup> ) 10 minutes after mixing	
<b>Tack-free Time</b>	<i>Uncured mixture of base compound and catalyst paste in weight ratio 13 : 1 or volume ratio 10 : 1</i> ~ 120 minutes	
<b>Sag Flow</b>	<i>Uncured compound: mixture of base compound and catalyst paste in weight ratio 13 : 1 or volume ratio 10 : 1</i> Non-sag	(ISO 7390-A + B -20 x 10 mm)
<b>Water Vapour Diffusion Coefficient</b>	<i>Cured rubber (after 2 weeks at +23°C / 50% r.h.)</i> 15 g m <sup>-2</sup> d <sup>-1</sup> (2.2 mm film)	(DIN 53122-A)
<b>Service Temperature</b>	<i>Cured rubber (after 2 weeks at +23°C / 50% r.h.)</i> -40°C to +150°C	

### Mechanical Properties

<b>Shear Strength</b>	Glass substrate; bond dimension: 12 x 12 x 50 mm		
	Shearing direction	Transverse	Longitudinal
	Tensile strength	0.8 N/mm <sup>2</sup>	0.8 N/mm <sup>2</sup>
	Elongation at break	200%	250%*
	Fracture type	cohesive	cohesive

\*with respect to the 12 x 12 mm bond cross-section

<b>Tear Strength</b>	<i>Cured rubber (after 2 weeks at +23°C / 50% r.h.)</i> ~ 6.0 N/mm	(ISO 34-C)
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<b>Shore A Hardness</b>	<i>Cured rubber (after 2 weeks at +23°C / 50% r.h.)</i> ~ 44	(ISO 868)
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*Uncured mixture of base compound and catalyst paste in weight ratio 13 : 1 or volume ratio 10 : 1*

Shore A Hardness, change at curing at +23 C / 50% r.h.

4 hours	11
6 hours	19
24 hours	35
3 days	39
12 days	44

<b>E-Modulus</b>	<i>Cured rubber (after 2 weeks at +23°C / 50% r.h.)</i>	
	1.00 N/mm <sup>2</sup> at 100% elongation at +23°C	(ISO 37, rod S2)
	0.95 N/mm <sup>2</sup> at 100% elongation at +23°C	(ISO 8339-A)
	0.50 N/mm <sup>2</sup> at 25% elongation at +23°C	(ISO 8339-A)
	1.02 N/mm <sup>2</sup> at 100% elongation at -20°C	(ISO 8339-A)
	0.47 N/mm <sup>2</sup> at 25% elongation at -20°C	(ISO 8339-A)
	- - - N/mm <sup>2</sup> at 100% elongation at +80°C	(ISO 8339-A)
	0.47 N/mm <sup>2</sup> at 25% elongation at +80°C	(ISO 8339-A)
~ 124 psi at 100% elongation at +23°C	(ASTM C1135)	
~ 83 psi at 50% elongation at +23°C	(ASTM C1135)	
~ 52 psi at 25% elongation at +23°C	(ASTM C1135)	

<b>Tensile Strength</b>	<i>Cured rubber (after 2 weeks at +23°C / 50% r.h.)</i>	
	1.80 N/mm <sup>2</sup> at +23°C	(ISO 37, rod S2)
	0.95 N/mm <sup>2</sup> at +23°C	(ISO 8339-A)
	1.21 N/mm <sup>2</sup> at -20°C	(ISO 8339-A)
	0.85 N/mm <sup>2</sup> at +80°C	(ISO 8339-A)
127 psi at +23°C	(ASTM C1135)	

<b>Elongation at Break</b>	<i>Cured rubber (after 2 weeks +23°C / 50% r.h.)</i>	
	210% at +23°C	(ISO 37, rod S2)
	100% at +23°C	(ISO 8339-A)
	160% at -20°C	(ISO 8339-A)
	60% at +80°C	(ISO 8339-A)
112% at +23°C	(ASTM C1135)	

<b>Elastic Recovery</b>	<i>Cured rubber (after 2 weeks +23°C / 50% r.h.)</i>	
	96% (elongation to 160% for 24 hours)	(ISO 7389)

<b>Sealant Design Strength for Supported Structures</b>	<i>Cured rubber (after 2 weeks +23°C / 50% r.h.)</i>	
	0.14 N/mm <sup>2</sup>	
	140 kPa	

<b>Alternating Stress</b>	1'000 cycles; 1 cycle per minute; ± 12.5% elongation		(DIN EN 29046)
	Storage: 14 days at +23°C / 50% r. h.		
	14 days at +70°C / 50% r. h.		
	1 day at +23°C / 50% r. h.		

	Reference value	1'000 cycles
Tensile strength	0.95 N/mm <sup>2</sup>	0.95 N/mm <sup>2</sup>
Elongation at break	100%	104%
E-Modulus at 50% elongation	0.76 N/mm <sup>2</sup>	0.74 N/mm <sup>2</sup>
E-Modulus at 25% elongation	0.50 N/mm <sup>2</sup>	0.49 N/mm <sup>2</sup>
Fracture type	cohesive	cohesive

## Resistance

<b>Aging Resistance</b>	Test acc. to ISO 11431, method A, procedure 1		
		Reference value	Value after 1'000 h
	Tensile strength	0.95 N/mm <sup>2</sup>	0.80 N/mm <sup>2</sup>
	Elongation at break	100%	270%
	E-Modulus at 50% elongation	0.76 N/mm <sup>2</sup>	0.44 N/mm <sup>2</sup>
	E-Modulus at 25% elongation	0.50 N/mm <sup>2</sup>	0.30 N/mm <sup>2</sup>
	Fracture type	cohesive	cohesive

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## System Information

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### Application Details

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#### Consumption

##### *Joint Design*

The joint design must be determined on a project-by-project basis. The determination of the joint bite (contact area of the sealant with the glass or metal surface) must take into account factors such as wind loads and glazing unit dimensions. It must be between 6 and 50 mm. The minimum joint width (distance between the surfaces to be bonded) for structural glazing bonds must be at least 6 mm. The joint width required may increase for larger pane dimensions and in case of temperature fluctuations. The ratio of joint bite to joint width must be at least 1 : 1 but not more than 4 : 1. A ratio of 2 : 1 is ideal.

Adhesion to three surfaces must be avoided.

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#### Substrate Preparation / Priming

##### *Cleaning*

Sikasil® SG-500 may only be applied to surfaces which are clean, dry, free of all loose material, dirt, rust or oil and other contaminants. Contaminated surfaces may be cleaned mechanically, if porous, or with a solvent if nonporous. Glass may be cleaned with water containing a surfactant or with a solvent. Metals may also be cleaned with a solvent. In the latter case, apply the solvent with a clean, oilfree, lintfree cloth. Remove residual solvent with a fresh, clean dry cloth before it evaporates.

*For structural glazing projects, the cleaning agent must be determined on project-by-project basis.*

##### *Priming*

Whether or not a primer is needed with Sikasil® SG-500 must be determined through project-specific adhesion tests.

Sikasil® Primers are primers, not cleaning agents. Therefore clean the surface as described for "Cleaning" by the two cloths method.

Subsequently:

- Pour a small amount of primer onto a clean, lint-free, dry cloth and apply it in one operation. Never dip the cloths into the primer!
- Only apply Sikasil® Primers (esp. Sikasil® Primer-790) in a thin layer, since otherwise the surface will be cracked and brittle and Sikasil®-SG silicone adhesives may no longer bond properly.
- Once the primer has been applied, it is essential that no more solvent gets onto the surface and that there is no further contamination.
- Allow to dry for the time given below and then apply Sikasil®-SG silicone adhesives within the flash-off mentioned.

##### *Sikasil® Primer-790:*

- For metals e.g. aluminium, stainless steel, galvanised steel
- For powder coatings, e.g. polyester, EP and PU coatings, PVDF coatings
- Flash off time: min. 20 minutes, max. 2 hours

##### *Sikasil® Primer-783:*

- For porous substrates e.g. concrete, aerated concrete and cement plaster
  - Flash off time: min. 30 minutes, max. 8 hours
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## Application Conditions / Limits

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**Substrate Temperature** +5°C min. / +40°C max.

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**Air Temperature** +5°C min. / +40°C max.

Optimum gunning temperatures are between +15°C and +30°C and a rel. humidity of 40% to 95%. If curing takes place under these conditions, bonded elements can be subject to loading after 3 days.

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**Substrate Humidity** Dry

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## Application Instructions

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### Application Method / Tools

Before processing, mix the two components A (base material) and B (catalyst paste) homogeneously and air bubble-free. Mix the two components in a ratio of:

Weight: 13 parts of Comp. A (base compound)  
1 part of Comp. B (catalyst paste)

Volume: 10 parts of Comp. A (base compound)  
1 part of Comp. B (catalyst paste)

I.e. 10 parts (by volume) or 13 parts (by weight) of base compound are mixed with one part of catalyst paste. This must be followed to an accuracy of  $\pm 10\%$ .

When mixing the two pastes, do not entrain air in the mixture. If this can't be avoided, de-gas compound under vacuum after mixing.

While component A (base compound) of Sikasil® SG-500 is stable in air, component B (catalyst paste) is hydrolysis sensitive and must only be exposed briefly to moist air.

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### Potlife

*Uncured mixture of base compound and catalyst paste in weight ratio 13 : 1 or volume ratio 10 : 1*

40-90 minutes

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### Notes on Application / Limits

Subject to individual testing for structural glazing projects Sikasil® SG-500 is readily applied to most types of glass (float or laminated glass, coated or uncoated, reflective or enamelled glass), ceramic tiles, glazed tiles, enamel, to metals such as aluminium, anodized aluminium, powder coated aluminium, steel, stainless steel, copper, zinc, lead, brass and impregnated, varnished or painted wood, and to plastics such as uPVC, epoxies, polyester and many other materials.

Sikasil® SG-500 may not be used on natural stone, such as marble, granite and quartzite, as it may cause staining. Sikasil® WS-355 is preferred here.

Do not use Sikasil® SG-500 on pre-stressed polyacrylate and polycarbonate elements as it may cause environmental stress cracking (crazing).

**Sikasil® SG-500 may only be used by experienced professionals and after a detailed examination of the corresponding project. The examination must at least include the following:**

- **Joint design**
- **Adhesion and compatibility tests**
- **Cleaning and priming**
- **Quality control**

**Sika Facade Competence Centres provide such examination as well as further product information upon request.**

Take great care in selecting glazing products, since incompatible materials will not only discolour the sealant, but also affect the mechanical properties and adhesion.

Please refer to our application guideline "Ideal Processes Produce Perfect Results - Structural Glazing" for further information.

#### *Technical service:*

Please contact your supplier for more details of available laboratory facilities, applications support and other technical services as well as comprehensive technical information and literature.

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## Health and Safety Information

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### Protective Measures

Do not allow uncured sealant to come into contact with the eyes or mouth as it may cause irritation. Must such contact occur, flush eyes or rinse mouth immediately with water and, if necessary, consult a doctor. Avoid prolonged contact of uncured sealant with the skin - use a dry cloth or paper to remove it. Change soiled work clothes and wash hands before breaks and after finishing work.

Component A of condensation-curing Sikasil® SG-500 grade contains only substances that have been found to both non-toxic and non-aggressive over many years of experience, and no special precautions are therefore necessary.

Component B of Sikasil® SG-500 must be handled with care. Avoid contact with the skin and mucous membranes, since the substance can cause irritation. Do not smoke or eat. If contact must occur, wash the skin with soap and water, rinse the eyes well with water. Consult a doctor if symptoms or irritation occur.

Since Sikasil® SG-500 releases alcohol on curing, ensure good ventilation indoors. Cured Sikasil® SG-500 can be handled without any risk to health.

Local regulations as well as health and safety advice on packaging labels must be observed.

Detailed health and safety information as well as detailed precautionary measures e.g. physical, toxicological and ecological data can be obtained from the safety data sheet. It is available on request from your supplier or Sika subsidiary.

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### Important Notes

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual data may vary due to changing conditions beyond our control.

Residues of material must be removed according to local regulations. Fully cured material can be disposed of as household waste under agreement with the responsible local authorities.

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### Legal Notes

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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 accordance with Sika's recommendations. 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 user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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Facade