



# Adesilex PG4

**Two-component, thixotropic, epoxy adhesive with modified-rheology for bonding Mapeband and Mapeband TPE, PVC braces, Hypalon and for structural bonding**

## WHERE TO USE

**Adesilex PG4** is particularly recommended both for bonding synthetic braces used in waterproofing applications and for repairing, sealing and bonding elements in concrete, reinforced concrete, metal and natural stone.

### Some application examples

- Waterproofing wide joints by bonding pre-formed straps (PVC, Hypalon, **Mapeband** and **Mapeband TPE**) to the concrete.
- Rigid structural bonding of prefabricated concrete elements.
- Sealing large cracks in industrial floors subject to traffic.
- Bonding slabs and pipes in concrete and fibre-reinforced concrete.
- Bonding steel to concrete.

## TECHNICAL CHARACTERISTICS

**Adesilex PG4** is a two-component adhesive based on epoxy resin, fine-grained selected aggregates and special additives blended according to a formula developed in MAPEI's own Research Laboratories.

Unlike **Adesilex PG1** and **Adesilex PG2**, two-component thixotropic epoxy adhesives used for structural bonds, this product is characterised by its extended workability time. This property makes the product easier to use, even at high temperatures.

**Adesilex PG4** is also characterised by its low viscosity and, as a result, offers good wetting of the substrate. This makes it easy to apply with a spatula on horizontal surfaces, vertical surfaces and on ceilings without dripping, due to its high thixotropy.

After preparation, **Adesilex PG4** hardens in 5 hours (at +23°C) through chemical cross-linkage without shrinking. The composite obtained is characterised by its high bonding properties and by its considerable mechanical strength.

**Adesilex PG4** meets the requirements defined by EN 1504-9 (*"Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - General principles for the use of products"*) and the minimum requirements claimed by EN 1504-4 (*"Structural bonding"*).

## RECOMMENDATIONS

- **Adesilex PG4** must not be used for sealing flexible joints or those which are subject to movement (use **Mapesil AC**, **Mapeflex PU20** or **Mapeflex PU21**).
- **Adesilex PG4** must not be used for construction joints between fresh and hardened concrete (use **Eporip**).
- **Adesilex PG4** must not be used on wet surfaces.
- **Adesilex PG4** must not be used on dirty or crumbly surfaces.

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- **Adesilex PG4** must not be used for bonding or grouting acid resistant ceramic tiles (use **Kerapoxy**).
- **MapeWrap 11** or **MapeWrap 12** are recommended for levelling off concrete surfaces before bonding carbon fibre fabrics (such as **MapeWrap C UNI-AX**, **MapeWrap C BI-AX** and **MapeWrap C QUADRI-AX**).

## APPLICATION PROCEDURE

### Preparation of the material and the substrate to be bonded

Hypalon straps must be cleaned beforehand with a solvent, as recommended by the producer of the material, to improve bonding of the resin to the product.

In the case of metallic surfaces, remove all traces of rust, paint and oil. Sandblasting down to a bare metal finish (SA 2 $\frac{1}{2}$ ) is recommended.

Concrete or natural stone substrates must be clean, solid and dry.

The most suitable method is either sandblasting or brushing of the surface, in order to remove loose or detached parts, efflorescence, cement laitance and traces of form-release oil.

After this operation, clean the remaining dust off the surface with compressed air.

To avoid the stresses induced by hygrometric shrinkage of the cementitious conglomerate being concentrated at the interface which is to be bonded, freshly laid concrete must be cured for at least 4 weeks before applying **Adesilex PG4**.

When applying the product, the temperature must be between +5°C and +30°C.

### Preparation of the product

The two components which make up **Adesilex PG4** must be mixed together. Pour component B (white) into component A (grey) and mix together with a low-speed drill fitted with a mixing attachment until a homogenous mix is obtained (uniform grey colour). The packages are pre-dosed. Therefore, do not use partial quantities of the two components in order to avoid accidental errors when calculating the mixing ratio; this could lead to incorrect hardening of the product. If only partial quantities of the components are to be used, use high-precision electronic scales.

Mixing ratio:

- 3 parts by weight of component A;
- 1 part by weight of component B.

### Application of the product

**Adesilex PG4** may be applied with either a flat spatula or trowel on **Mapeband**, **Mapeband TPE** on PVC braces, on Hypalon between concrete surfaces, between concrete and metal or on natural stone.

- If **Adesilex PG4** is to be used for bonding straps, we recommend applying masking tape on the outside surface of the joint where the adhesive is to be spread to obtain a well-defined profile. Apply a first, 1-2 mm-thick uniform layer of **Adesilex PG4** on the clean, dry substrate

with a smooth spatula; avoid applying the adhesive inside the joint.

Lay on the straps to be bonded by pressing lightly along the sides. Make sure that all wrinkles and creases are eliminated and that air bubbles are not formed. Spread on a second layer of **Adesilex PG4** while still fresh, and completely cover the lateral parts of the tape with the new layer. Smooth off the product with a flat spatula.

- If **Adesilex PG4** is to be used for bonding concrete, metallic or natural stone surfaces, we recommend spreading the product on both surfaces to be bonded, and to make sure that it penetrates well into uneven areas in order to obtain a good bond. After spreading on the product, join the two surfaces and hold them firmly together and still until the adhesive is completely hardened. The correct thickness in order to guarantee a good bond between the two parts is approximately 1-2 mm.

Surrounding temperature effects the hardening time of the product: at +23°C

**Adesilex PG4** remains workable for 70 minutes and at +10°C for 150 minutes.

Once these times have been reached, the hardening process starts.

**Adesilex PG4** must be applied within the working times indicated. Therefore, we recommend organising the work to be carried out in order to finish the job within the aforementioned times.

### Precautions to be taken before application

No particular precautions need to be taken when the temperature is between +10°C and +30°C.

Thermal insulation must be maintained for at least 24 hours after application. Before use, store the product in a heated area.

### Cleaning

**Adesilex PG4** bonds strongly even to metal. We therefore recommend that tools are cleaned with solvent (ethanol, toluene, etc.) before the product hardens.

### CONSUMPTION

1.60-1.65 kg/m<sup>2</sup> per mm of thickness

### PACKAGING

6 kg kit (4.5 kg component A, 1.5 kg component B).

30 kg kit (22.5 kg component A, 7.5 kg component B).

### STORAGE

24 months if kept in their original packaging and stored in areas at a temperature of between +5°C and +30°C.

### SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

**Adesilex PG4** component A is irritating to eyes and skin. Component B is corrosive and may cause severe burns. It is also harmful if it comes into contact with the skin or if swallowed. Both component A and component B may provoke rashes in those



Preparing the mix



Applying Adesilex PG4 with a trowel



Laying a copper neck-flange and drain spout

## TECHNICAL DATA (typical values)

### PRODUCT IDENTITY

	component A	component B
<b>Consistency:</b>	thick paste	thick paste
<b>Colour:</b>	grey	white
<b>Density (kg/l):</b>	1.70	1.65
<b>Brookfield viscosity (mPa·s):</b>	650 (rotor F - 5 revs)	320 (rotor D - 2.5 revs)
<b>Storage:</b>	24 months in its original, sealed packaging at a temperature of between +5°C and +30°C	
<b>Hazard classification according to EC 1999/45:</b>	irritant, hazardous for the environment Before using refer to the "Safety instructions for preparation and application" paragraph and the information on the packing and Safety Data Sheet	corrosive, hazardous for the environment
<b>Customs class:</b>	3506 91 00	

### APPLICATION DATA (at +23°C - 50% R.H.)

<b>Mixing ratio:</b>	component A : component B = 3 : 1
<b>Consistency of mix:</b>	thixotropic paste
<b>Colour of mix:</b>	grey
<b>Density of mix (kg/l):</b>	1.65
<b>Brookfield viscosity (Pa·s):</b>	450 (rotor F - 5 revs)
<b>Workability time (EN ISO 9514):</b>	150 minutes
- at +10°C:	70 minutes
- at +23°C:	45 minutes
- at +30°C:	
<b>Setting time:</b>	12 hours
- at +10°C:	5 hours
- at +23°C:	2 hours 30 minutes
- at +30°C:	
<b>Application temperature range:</b>	from +5°C to +30°C
<b>Complete hardening time:</b>	7 days

### FINAL PERFORMANCES

Performance characteristic	Test method	Requirements according to EN 1504-4	Product performance
<b>Linear shrinkage (%):</b>	EN 12617-1	≤ 0.1	0 (at +23°C) 0 (at +70°C)
<b>Compressive modulus of elasticity (N/mm<sup>2</sup>):</b>	EN 13412	≥ 2,000	5,000
<b>Coefficient of thermal expansion:</b>	EN 1770	≤ 100 x 10 <sup>-6</sup> K <sup>-1</sup> (measured between -25°C and +60°C)	68 x 10 <sup>-6</sup> K <sup>-1</sup>
<b>Glass transition temperature:</b>	EN 12614	≥ +40°C	> +40°C
<b>Durability (freeze/thaw and hot, damp cycles):</b>	EN 13733	compressive shear load > tensile strength of concrete no failure of steel test sample	meets specifications
<b>Reaction to fire:</b>	Euroclass	according to value declared by manufacturer	C-s1, d0
<b>Concrete-steel bond strength (N/mm<sup>2</sup>):</b>	EN 1542	not required	> 3 (failure of concrete)
<b>Concrete-Mapeband bond strength (N/mm):</b>	ISO 8510	not required	> 2.5

### BONDED MORTAR OR CONCRETE

<b>Bond strength to concrete:</b>	EN 12636	failure of concrete	meets specifications
<b>Sensitivity to water:</b>	EN 12636	failure of concrete	meets specifications
<b>Shear strength (N/mm<sup>2</sup>):</b>	EN 12615	≥ 6	> 9
<b>Compressive strength (N/mm<sup>2</sup>):</b>	EN 12190	≥ 30	> 60

### STRENGTHENING USING BONDED PLATE

<b>Shear strength (N/mm<sup>2</sup>):</b>	EN 12188	≥ 12	50° > 32 60° > 27 70° > 25
<b>Bond strength: - pull out (N/mm<sup>2</sup>):</b>	EN 12188	≥ 14	> 16
<b>Bond strength: - inclined shear strength (N/mm<sup>2</sup>):</b>	EN 12188	50° ≥ 50 60° ≥ 60 70° ≥ 70	50° > 66 60° > 64 70° > 80



Subsequent smoothing with Adesilex PG4



Laying flexible hypalon brace



Final covering with Adesilex PG4

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who are allergic to such substances. Always use protective gloves and goggles when handling and using the products. If they come into contact with the eyes, wash well with plenty of clean water and seek medical attention.

**Adesilex PG4** (components A and B) is dangerous for aquatic environment - avoid release to the environment.

PRODUCT FOR PROFESSIONAL USE.

#### **WARNING**

*While the indications and guidelines contained in this data sheet correspond to the company's knowledge and wide*

*experience, they must be considered, under all circumstances, merely as an indication and subject to confirmation only after long-term, practical applications. Therefore, anybody who undertakes to use this product, must ensure beforehand that it is suitable for the intended application and, in all cases, the user is to be held responsible for any consequences deriving from its use.*

**All relevant references  
for the product are available  
upon request and from  
[www.mapei.com](http://www.mapei.com)**

