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.
- Bonding metal or TPE drains (**Drain Front**).

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 & Development 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 can be applied even on very damp surfaces as long as there is no standing water.
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 products from the **Mapesil** or **Mapeflex** ranges).
- **Adesilex PG4** must not be used for construction joints between fresh and hardened concrete (use **Eporip**).
- **Adesilex PG4** must not be used on dirty or crumbly surfaces.
- **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 $2^1/_2$) 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

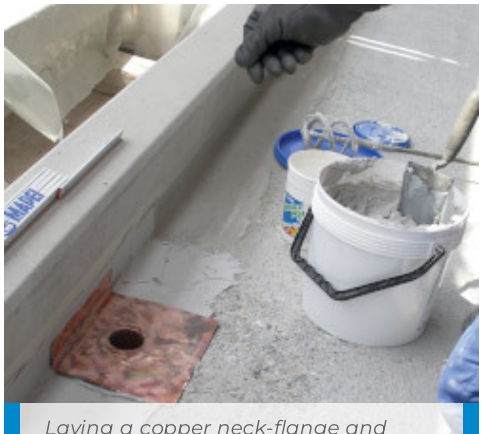
Adesilex PG4 may be applied with either a flat spatula or trowel on **Mapeband**, **Mapeband TPE** on PVC braces, on Hypalon between concrete surfaces, between concrete and metal or on natural stone.

- 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 trowel and dust the surface with dry sand to improve the adhesion of products applied later.
- 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.

Preparing the mix

Applying Adesilex PG4 with a trowel



Laying a copper neck-flange and drain spout

Subsequent smoothing with Adesilex PG4

Laying flexible hyphalon brace

Final covering with Adesilex PG4

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^2 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).
2 kg kit (1.5 kg component A, 0.5 kg component B).

STORAGE

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

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

When the product reacts it generates considerable heat (or low amount, depending on the product). After mixing components A and B, we recommend applying the product as soon as possible and never leaving the container unattended until it is completely empty.
For further and complete information about the safe use of our product, please refer to the latest version of our Material Safety Data Sheet.
PRODUCT ONLY FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY		
	component A	**component B**
Consistency:	thick paste	thick paste
Colour:	grey	white
Density (kg/l):	1.70	1.65
Brookfield viscosity (mPa·s):	650 (rotor F - 5 revs)	320 (rotor D - 2.5 revs)

APPLICATION DATA (at +23°C - 50% R.H.)	
Mixing ratio:	component A : component B = 3 : 1
Consistency of mix:	thixotropic paste
Colour of mix:	grey
Density of mix (kg/l):	1.65
Brookfield viscosity (Pa·s):	450 (rotor F - 5 revs)
Workability time (EN ISO 9514):	
at +10°C:	150 minutes
at +23°C:	70 minutes
at +30°C:	45 minutes
Setting time:	
at +10°C:	12 hours
at +23°C:	5 hours
at +30°C:	2 hours 30 minutes
Application temperature range:	from +5°C to +30°C

Complete hardening time:	7 days

FINAL PERFORMANCES			
Performance characteristic	**Test method**	**Requirements according to EN 1504-4**	**Product performance**
Linear shrinkage (%):	EN 12617-1	≤ 0.1	0 (at +23°C) 0 (at +70°C)
Compressive modulus of elasticity (N/mm²):	EN 13412	≥ 2,000	5,000
Coefficient of thermal expansion:	EN 1770	≤ 100 x 10^{-6} K^{-} (measured between -25°C and +60°C)	68 x 10^{-6} K^{-1}
Glass transition temperature:	EN 12614	≥ +40°C	> +40°C
Durability (freeze/thaw and hot, damp cycles):	EN 13733	compressive shear load > tensile strength of concrete no failure of steel test sample	meets specifications
Reaction to fire:	EN 13501-1	Euroclass	C-s1, d0
Bond strenght on damp concrete according to EN 12636 (N/mm²):	EN 1542	not required	> 3 (failure of concrete)
Concrete-steel bond strength (N/mm²):	EN 1542	not required	> 3 (failure of concrete)
Concrete-Mapeband bond strength (N/mm):	ISO 8510	not required	> 2.5

BONDED MORTAR OR CONCRETE			
Bond strength to concrete:	EN 12636	failure of concrete	meets specifications
Sensitivity to water:	EN 12636	failure of concrete	meets specifications
Shear strength (N/mm²):	EN 12615	≥ 6	> 9
Compressive strength (N/mm²):	EN 12190	≥ 30	> 60

STRENGTHENING USING BONDED PLATE			
Shear strength (N/mm²):	EN 12188	≥ 12	50° > 3260° > 2770° > 25
Bond strength: pull out (N/mm²):	EN 12188	≥ 14	> 16
Bond strength: inclined shear strength (N/mm²):	EN 12188	50° ≥ 50 60° ≥ 60 70° ≥ 70	50° > 66 60° > 64 70° > 80

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application: for this reason, anyone who

intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.
The values declared in the TECHNICAL DATA table (typical values) were obtained in compliance with test methods and curing cycles defined in the technical standards referenced therein. Therefore, please note that the use of test procedures or methods other than those indicated in the table could lead to different values and that, in such cases, any liability of our company is excluded.
Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

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