

PLANITOP LSN R3

Medium strength (40 MPa), low shrinkage, fibre-reinforced, sulphate resistant thixotropic mortar



WHERE TO USE

Repair of degraded vertical or horizontal concrete surfaces with mortar possessing medium mechanical performance characteristics.

Some application examples

- Repair of degraded concrete surfaces, corners of pillars and beams, balconies damaged by rusted reinforcing bars.
- Repairs to diaphragms and tunnels.
- Concrete linings for canals and hydraulic projects, including in contact with potable water.
- Reconstruction of concrete coverings of reinforcing bars.
- Repair of surface irregularities including exposed aggregate, joints between new and old concrete, holes in formwork concrete, protruding steel, etc.
- Filling of rigid joints

TECHNICAL CHARACTERISTICS

Planitop LSN R3 is a premixed powdered mortar composed of cement, graded aggregates and special additives manufactured from a formula developed in the MAPEI Research Laboratories.

When mixed with water **Planitop LSN R3** forms an easy to apply thixotropic mortar that can be applied without slumping even in substantial thicknesses on vertical surfaces without formwork.

When fully cured, **Planitop LSN R3**:

- has moderate flexural and compressive strength.
- has a modulus of elasticity, thermal expansion coefficient and permeability coefficient similar to that of medium quality concrete.
- is water resistant with very low permeability.
- is low shrinkage (<600 µm after 28 days).
- is sulphate resistant.
- has excellent adhesion to existing concrete surfaces provided they are saturated with water and reinforcing bars are first treated with **Mapefer 1K Zero**.

Planitop LSN R3 is also suitable in conjunction with galvanic cathodic protection /sacrificial anodes. When installing **Mapeshield I**, there must be no structural damage to the reinforcement. In such cases, the reinforcement must be integrated or replaced according to calculations carried out by a specialised technician. · When the use of **Mapeshield I** is planned, do not apply **Mapefer 1K** or any other type of anti-rust protection on the reinforcement rods.

Planitop LSN R3 is certified and meets the requirements of AS/NZS 4020-2018.

RECOMMENDATIONS

- Do not use **Planitop LSN R3** to repair structures subject to high compressive loads, high impact or abrasion: use **Planitop LSN R4** instead.
- Do not use **Planitop LSN R3** on smooth concrete surfaces. Roughen the surface thoroughly and add reinforcing if necessary.
- Do not use **Planitop LSN R3** for anchoring (use **Mapefill SP** or **Mapefill GP AU**).
- Do not pour **Planitop LSN R3** for pumping into formwork (use **Mapefill MC06** or **Mapegrout Hi-Flow**).
- Do not add cement or admixtures to **Planitop LSN R3**.
- Do not add water once the mix has begun to set.
- Do not use **Planitop LSN R3** at temperatures lower than +5°C.
- Do not use **Planitop LSN R3** if the bag has been damaged or already opened.

APPLICATION PROCEDURE

TECHNICAL INFORMATION FOR APPLICATION

Composition of mix:	14.5 – 15.5 parts of water 100 kg of Planitop LSN R3
Thickness layer:	from 6 to 50 mm
Application temperature range:	surrounding temperature and substrate temperature from +5°C to +35°C
Pot life of mix:	approx. 1 h (at +20°C)

Preparing the substrate

- Remove degraded and loose concrete until the substrate is solid, resistant and rough. Any previous repair work that is no longer thoroughly bonded must also be removed.
- Sandblast the concrete and the reinforcing bars until they are free of dirt, rust, cement laitance, grease, oil, varnish or old paint.
- Saturate the substrate with water. Before repairing with **Planitop LSN R3**, wait until the excess water has evaporated. To facilitate the elimination of free water, use compressed air if needed.

Preparing the mortar

- Pour into the mixer the amount of water needed to obtain the consistency required for the application. Litres of water per 20 kg bag: 2.9 - 3.1 L.
- Start the mixer and slowly add the **Planitop LSN R3** to the water in a continuous flow.
- Mix for 1 to 2 minutes, then make sure the mix is well blended. Scrap any unblended powder from the bottom and the sides of the mixer. Mix again for another 2 to 3 minutes.
- Depending on the quantity to be mixed, a mortar mixer or drill with a suitable mixing paddle may also be used. Mix at low speed to avoid entraining air.
- Avoid mixing manually unless absolutely necessary. If so, mix small amounts at a time for at least 5 to 6 minutes until a completely homogeneous paste is obtained.

Keep in mind that mixing by hand requires a larger amount of water. This adversely affects several of the mortar's characteristics, including mechanical strength, shrinkage, impermeability, etc.

Planitop LSN R3 remains workable for approximately 1 hour at +20°C. Instructions for the preparation of the mortar to create samples for Lab testing are contained in the TECHNICAL DATA table.

The expansion of **Planitop LSN R3** is calculated to compensate for plastic shrinkage. For it to be effective, the substrate needs to be adequately reinforced with rebars or forms.

Applying **Planitop LSN R3** without formwork in thicknesses of more than 20 mm should be done only after reinforcing and roughening the surface of the concrete, taking care to cover the reinforcement with a layer at least 20 mm thick.

Lower thicknesses can be applied without reinforcing as long as the substrate has been substantially roughened to counter the expansion.

The expansion phase ends during the first days of curing.

Applying the mortar

Apply **Planitop LSN R3** with a trowel in layers between 6mm and 50mm to the appropriately prepared and roughened substrate, taking care to cover the reinforcement with at least a 20mm thickness of mortar.

Planitop LSN R3 can also be spray applied, using Turbosol or Putzmeister type equipment, excluding continuous mixing machines.

Reinforcing bars must be previously treated with **Mapefer 1K** before applying the **Planitop LSN R3**, unless galvanic cathodic protection is to be used. Please refer **Mapeshield I** technical data sheet for further details. When further coats of **Planitop LSN R3** are needed, leave the previous coat rough and apply before the previous layer has finished setting (within 4 hours at 23°C).

After completing repair work, the surfaces may be skimmed with **Planitop Fine Finish** or **Planitop Smooth & Repair R4** or with an elastic skimming product such as **Mapelastisc Smart** or **Mapelastisc Guard**.

Coloured **Elastocolor Paint** may also then be applied to create a protective finish.

PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

- Only use bags of **Planitop LSN R3** which have been stored on their original pallets.
- In warm weather store the material in a cool place. Use cold water to prepare the mix.
- In cold weather, store the product in a place which is protected from frost at a temperature of +20°C, and use tepid water to blend the mortar.

After applying **Planitop LSN R3**, we recommend that it is cured carefully, especially in hot or windy weather, to avoid the water evaporating too quickly and causing the formation of surface cracks due to plastic shrinkage. Keep the surface moist for at least the first 48 hours. As an alternative, after tamping the mortar, spread on a layer of either **Mapecure E** anti-evaporation treatment in watery emulsion with a low-pressure pump, or **Elastocolor Primer** solvent-based, high-penetration primer for absorbent substrates and curing agent for repair mortar. **Mapecure E 30**, as with all the best quality products in the same category which are currently available on the market, impede bonding of successive dressing layers. Therefore, if a smoothing layer or paint is to be applied later, they must be completely removed by sandblasting.

If **Elastocolor Primer** is used as an anti- evaporation treatment, on the other hand, a final protective layer of **Elastocolor Paint** may be applied directly on the treated surface without having to remove it.

CLEANING

Mortar that has not yet hardened can be removed from tools with water. After setting, cleaning is very difficult and can only be done mechanically.

CONSUMPTION

18.5 kg/m² per cm of thickness.

PACKAGING

20 kg bag.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Consistency: powder

Colour: grey

Maximum size of aggregate: 0.5 mm

Chloride ion content: – minimum requirement ≤0.05% - according to EN 1015-17: ≤0.05%

TECHNICAL INFORMATION FOR THE PREPARATION OF THE PRODUCT

Composition of mix:	100 parts in weight of Planitop LSN R3 with 15% of water
Preparation of the mix:	Mixing of the product according to EN 196-1
Pot life of mix:	Setting time (AS 1012.18): Initial set: 3 hours Final set: 4.5 hours

CHARACTERISTICS OF FRESH MIX (at +20°C - 50% R.H.)

Colour of mix:	grey
Consistency of mix:	thixotropic
Density of mix:	2150 kg/m ³

FINAL PERFORMANCE

According to curing defined in test methods

Performance characteristic	Test method	Performance of product
Compressive strength: - 1 day - 7 days - 28 days	AS 1478.2	10 MPa 30 MPa 40 MPa
Flexural strength (28 days):	AS 196-1	8 MPa
Bond strength to substrates determined by tensile:	AS 1012.24	>1.0 MPa
Drying shrinkage:	AS 1478.2	<600 µm (after 28 days)
Restrained expansion:	AS TM C878	positive expansion (after 7 days)
Electrical resistivity (28 days):	T 358	<50,000 Ωcm

NOTES: Preparation of samples: compaction according to EN 196-1.

STORAGE

Planitop LSN R3 may be stored for up to 12 months in its original packaging. The product is available in special 20 kg bag which must be stored completely protected from exposure to moisture and rain.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instructions for the safe use of our products can be found on the latest version of the Safety Data Sheet, available from our website www.mapei.com.au
PRODUCT FOR PROFESSIONAL USE.

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.au

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The most up-to-date TDS can be downloaded from our website www.mapei.com.au

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