Planitop Smooth & Repair

R2-CLASS RAPID-SETTING CEMENTITIOUS MORTAR FOR REPAIRING AND SMOOTHING CONCRETE

Just 1 product for smoothing and repairing concrete surfaces
Planitop Smooth & Repair

R2-class, rapid-setting, fibre-reinforced cementitious mortar applied in a single layer from 3 to 40 mm thick, for repairing and smoothing concrete.

- Good maintenance of workability and rapid hardening.
- Highly thixotropic for easy application on both vertical and overhead surfaces, with no waste.
- Packed in waterproof vacuum-packed bags for better storage.

Technical characteristics

- **Very low emission** level of volatile organic compounds (VOC) EMICODE EC1 R Plus.
- **Highly versatile**, by adding Mapetard ES its excellent inherent workability can be extended by a further 15-20 minutes.
- **Excellent adhesion** (≥ 1.5 MPa) to both old concrete, if roughened and wetted with water prior to application, and to rebar, especially when treated with Mapefer or Mapefer 1K, anti-corrosion re-alkalising cementitious mortar certified according to EN 1504-7 “Corrosion protection of reinforcement”.

Application of Planitop Smooth & Repair by trowel

Application of Planitop Smooth & Repair with a finishing trowel
Smoothing Planitop Smooth & Repair with a straight edge

Floating the surface of Planitop Smooth & Repair

- **High dimensional stability** to reduce the risk of cracking and crazing during both the plastic phase and when hardened.
- **Excellent flow** to facilitate spreading with a smooth trowel.
- **Easy to create natural finishes** with a sponge float around 30 minutes after applying the product as is and after around 45-50 minutes if admixed with Mapetard ES (at +20°C).
- **Thermally compatible** with freeze/thaw cycles measured as adhesion according to EN 1542.
- **Low water permeability**.
- **Planitop Smooth & Repair** meets the minimum requirements of EN 1504-3 (“Structural and non-structural repairs”) for non-structural R2-class mortars and the requirements of EN 1504-2 coating (C) according to principles MC and IR (“Concrete surface protection systems”).
- The special 25 kg vacuum-packed polyethylene bags allow the product to be stored outside. Contact with the atmosphere and rain have no effect on the product’s characteristics. Also available in cardboard boxes with four 5 kg bags.
Planitop Smooth & Repair

Where to use

- Non-structural repairs and smoothing over internal and external horizontal and vertical concrete surfaces; suitable for repairing structures exposed to the open air and/or in permanent contact with water.
- Quick repairs to deteriorated parts in concrete and the corners of beams, pillars, buffer walls, cornices and the front edges of balconies.
- Quickly smoothing over surface defects in cast concrete such as gravel clusters, spacer holes, construction joints, etc. before painting the surface.
- Repairing and smoothing over concrete mouldings on civil buildings such as skirt roofs and protruding decorative elements.
- Repairing pre-cast concrete structures.

Product classification according to the minimum requirements of EN 1504-3 and 1504-2

CE-Mark

GEV certification (EMICODE EC1 R Plus)

Exclusive Mapei technology to identify products for rapid installation of floor and wall coverings

A product that helps earn Leed award points
## Technical data

### Product and application data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum size of aggregate (EN 1015-1):</td>
<td>0.4 mm</td>
</tr>
<tr>
<td>Application temperature:</td>
<td>from +5 to +35°C</td>
</tr>
<tr>
<td>Pot life of mix:</td>
<td>approx. 15 minutes (*)</td>
</tr>
<tr>
<td>Minimum applicable thickness:</td>
<td>3 mm</td>
</tr>
<tr>
<td>Maximum applicable thickness per layer:</td>
<td>40 mm</td>
</tr>
</tbody>
</table>

### Performance characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive strength after 28 days (EN 12190):</td>
<td>≥ 18 MPa</td>
</tr>
<tr>
<td>Flexural strength after 28 days (EN 196/1):</td>
<td>≥ 4 MPa</td>
</tr>
<tr>
<td>Compressive modulus of elasticity (EN 13412):</td>
<td>13 GPa</td>
</tr>
<tr>
<td>Adhesion to concrete after 28 days (EN 1542):</td>
<td>≥ 1.5 MPa</td>
</tr>
<tr>
<td>Thermal compatibility with freeze/thaw cycles</td>
<td>≥ 1.5 MPa</td>
</tr>
<tr>
<td>with de-icing salts (EN 13687/1) after 50 cycles measured as adhesion according to EN 1542:</td>
<td></td>
</tr>
<tr>
<td>Capillary absorption (EN 13057):</td>
<td>≤ 0.4 kg/m² • h⁰.⁵</td>
</tr>
<tr>
<td>Impermeability expressed as coefficient of</td>
<td>W &lt; 0.1 kg/m² • h⁰.⁵</td>
</tr>
<tr>
<td>permeability to free water (EN 1062-3):</td>
<td>Class III (low</td>
</tr>
<tr>
<td></td>
<td>permeability)</td>
</tr>
<tr>
<td></td>
<td>according to EN 1062-1</td>
</tr>
<tr>
<td>Permeability to water vapour – equivalent air</td>
<td>S₀ &lt; 5 m</td>
</tr>
<tr>
<td>thickness S₀ (EN ISO 7783-1):</td>
<td>Class I (permeable to</td>
</tr>
<tr>
<td></td>
<td>water vapour)</td>
</tr>
<tr>
<td>Reaction to fire (EN 13501-1):</td>
<td>Class A1</td>
</tr>
<tr>
<td>Packaging:</td>
<td>25 kg vacuum-packed</td>
</tr>
<tr>
<td></td>
<td>polyethylene bags;</td>
</tr>
<tr>
<td></td>
<td>boxes of four 5 kg</td>
</tr>
<tr>
<td>Consumption:</td>
<td>approx. 15 kg/m² per</td>
</tr>
<tr>
<td></td>
<td>cm of thickness</td>
</tr>
</tbody>
</table>

(*) Adding Mapetard ES extends the workability time of Planitop Smooth & Repair by a further 15-20 minutes.

N.B. The performance characteristics of Planitop Smooth & Repair admixed with Mapetard ES are the same as the product without admixture.
Mapetard ES

Set-retarding admixture for rapid-setting cementitious mortar.

Technical characteristics

• Special chloride-free liquid admixture in watery solution to delay setting time and, as a result, extend the workability time of rapid-setting cementitious mortar such as Planitop Smooth & Repair.

• When Mapetard ES is added to the mixing water for Planitop Smooth & Repair, at a rate of up to one 0.25 kg canister for each 25 kg bag it extends the excellent inherent workability of the mortar by 15-20 minutes.

Adding Mapetard ES to the mixing water for Planitop Smooth & Repair

Adding Planitop Smooth & Repair to the mixing water admixed with Mapetard ES
Where to use

- Particularly recommended when, because of particular site conditions or high temperatures, the workability time of Planitop Smooth & Repair needs to be extended.
1 Concrete Substrate

2 One-component corrosion-inhibiting cement mortar *Mapefer 1K*

3 R2-class, rapid-setting, thixotropic, fibre-reinforced, cementitious mortar for repairing and smoothing concrete *Planitop Smooth & Repair*

4 Water-based undercoat *Malech*

5 Protective elastic paint *Elastocolor Paint*
**Planitop Smooth & Repair R4**

1. Concrete Substrate
2. One-component corrosion-inhibiting cement mortar Mapefer 1K
3. Structural R4-class, rapid-setting, thixotropic, fibre-reinforced, cementitious mortar for repairing and smoothing concrete Planitop Smooth & Repair R4
4. Water-based undercoat Malech
5. Protective elastic paint Elastocolor Paint

**Mapefer 1K**

1. Concrete Substrate
2. Inhibiting cement mortar - 1K
3. Structural R4-class, rapid-setting, thixotropic, fibre-reinforced, cementitious mortar for repairing and smoothing concrete Planitop Smooth & Repair R4
Where to use

• Particularly recommended when, because of particular site conditions or high temperatures, the workability time of Planitop Smooth & Repair R4 needs to be extended.

Mixing Planitop Smooth & Repair R4
Mapegrand ES
Set-retarding admixture for rapid-setting cementitious mortar.

**Technical characteristics**

- Special chloride-free liquid admixture in watery solution to delay setting time of rapid-setting cementitious mortar such as Planitop Smooth & Repair R4.
- When Mapegrand ES is added to the mixing water for Planitop Smooth & Repair R4, at a rate of up to 0.25 kg canister for each 25 kg bag, it extends the excellent inherent workability of the mortar by 15-20 minutes.

Adding Mapegrand ES to the mixing water admixed with Planitop Smooth & Repair R4 mixing water.

Adding Planitop Smooth & Repair R4 to the mixing water admixed with Mapegrand ES.
### Technical Data

**Product and Application Data**

**Maximum size of aggregate (EN 1015-1):**
0.4 mm

**Application temperature:**
+5 to +35°C

**Pot life of mix:**
Approx. 15 minutes (*)

**Minimum applicable thickness:**
3 mm

**Maximum applicable thickness:**
40 mm

**Maximum size of aggregate (EN 1015-1):**
0.4 mm

**Application temperature:**
+5 to +35°C

**Pot life of mix:**
15 minutes (*)

**Consumption:**
Approx. 17 kg/m² per cm of thickness

**Packaging:**
25 kg vacuum-packed polyethylene bags

**Class A1:**
No cracks after 160 days

**Reference concrete:**
> 5 cm

**Performance Characteristics**

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive strength after 28 days (EN 12190)</td>
<td>52 MPa</td>
</tr>
<tr>
<td>Flexural strength after 28 days (EN 196/1)</td>
<td>8 MPa</td>
</tr>
<tr>
<td>Compressive modulus of elasticity (EN 13412)</td>
<td>24 GPa</td>
</tr>
<tr>
<td>Adhesion to concrete after 28 days (EN 1542)</td>
<td>≥ 2 MPa</td>
</tr>
<tr>
<td>Resistance to accelerated carbonation</td>
<td></td>
</tr>
<tr>
<td>Permeability to water vapour – equivalent air thickness (EN ISO 7783-1)</td>
<td>&lt; 0.1 kg/m² per cm h 0.5</td>
</tr>
<tr>
<td>Impermeability to free water (EN 1062-3)</td>
<td>W &lt; 0.1 kg/m² per cm h 0.5</td>
</tr>
<tr>
<td>Permeability to water vapour – equivalent air thickness (EN ISO 1062-3)</td>
<td>&lt; 5 m</td>
</tr>
<tr>
<td>Crack resistance (EN 1542)</td>
<td></td>
</tr>
</tbody>
</table>

(*) Adding Mapetard ES extends the workability time of Planitop Smooth & Repair R4 by a further 15-20 minutes.

N.B. The performance characteristics of Planitop Smooth & Repair R4 admixed with Mapetard ES are the same as the product without admixture.
Where to use

- Structural repairs and smoothing over internal and external, horizontal and vertical concrete surfaces; suitable for repairing structures exposed to the open air and in permanent contact with water.
- Quick repairs to deteriorated parts in concrete on beams, pillars and structural members where the use of high strength (R4-class) mortar is specified. It may also be used to repair non-structural members exposed to the open air and in permanent contact with water.
- Repairs to prefabricated concrete members and elements.
- Repairs to concrete damaged by rusty rebar due to carbonation and/or chloride penetration.
- Repairs and structural strengthening of concrete by integrating with painting the surface.
- Repairs to the use of high strength (R4-class) mortar
- Quickly smoothing over surface defects in cast concrete such as deep gravel clusters, spacer holes, construction joints, etc. before painting the surface.

Planitop Smooth & Repair R4

Product classification according to the minimum requirements of EN 1504-2 and EN 1504-3

CE-Mark

Product that helps earn Leed award points

Exclusive Mapei technology to identify products for rapid installation of floor and wall coverings

EUROPEAN STANDARD IN COMPLIANCE WITH SYSTEMS FOR CONCRETE SURFACE PROTECTION

EUROPEAN STANDARD IN COMPLIANCE WITH PRINCIPLES
Floating the surface of Planitop Smooth & Repair R4

Application of Planitop Smooth & Repair R4 with a finishing trowel

• High dimensional stability to reduce the risk of cracking and crazing during both the plastic phase and when hardened.

• Excellent flow to facilitate spreading with a smooth trowel.

• Easy to create natural finishes with a sponge float around 20 minutes after applying the product as is and after around 35-40 minutes if admixed with Mapetard ES (at +20°C).

• Thermally compatible with freeze/thaw cycles measured as adhesion according to EN 1542.

• Impermeable to water.

• Thermally compatible with freeze/thaw cycles measured as adhesion according to EN 1542.

• Thermally compatible with Mapetard ES (at +20°C).

• Easy to create natural finishes with a smooth trowel.

• High dimensional stability to reduce the risk of cracking and crazing.

The special 25 kg vacuum-packed polyethylene bags allow the product to be stored outside. Contact with the atmosphere and rain have no effect on the product's characteristics.

Planitop Smooth & Repair R4 meets the minimum requirements of EN 1504-3 ("Structural and non-structural repairs") for non-structural R4-class mortars and the requirements of EN 1504-2 coating (C) according to principles MC and IR (Concrete surface protection). Planitop Smooth & Repair R4 is also tested for non-structural R4-class mortars and the requirements of EN 1504-3 ("Structural and non-structural repairs") for non-structural R4-class mortars and the requirements of EN 1504-2 coating (C) according to principles MC and IR (Concrete surface protection).

• Thermally compatible with freeze/thaw cycles measured as adhesion according to EN 1542.

• Impermeable to water.

• Planitop Smooth & Repair R4 meets the minimum requirements of EN 1504-3 ("Structural and non-structural repairs") for non-structural R4-class mortars and the requirements of EN 1504-2 coating (C) according to principles MC and IR (Concrete surface protection systems).
Planitop Smooth & Repair R4

R4-class, rapid-setting fibre-reinforced structural cementitious mortar, applied in a single layer from 3 to 40 mm thick, for repairing and smoothing concrete.

- Good maintenance of workability and rapid hardening.
- Highly versatile, by adding Mapego R Plus.
- Packed in waterproof vacuum-packed bags for better storage.
- Very low emission level of volatile organic compounds (VOC).

Technical characteristics

- Excellent adhesion (≥ 2 MPa) to both old concrete (if roughened and wetted with water prior to application, and to rebars, especially when treated with Mapefer or Mapefer 1K).
- Highly thixotropic for easy application on both vertical and overhead surfaces, with no waste.
- Very low emission level of volatile organic compounds (VOC).

Application of Planitop Smooth & Repair R4

Floating the surface of Planitop Smooth R4 to create a smooth finish.

Repair R4 by trowel.
Smooth & Repair R4

Planitop

R4-CLASS RAPID-SETTING STRUCTURAL CEMENTITIOUS MORTAR FOR REPAIRING AND SMOOTHING CONCRETE

Just 1 product for smoothing and repairing concrete surfaces