Planitop Smooth & Repair R4

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

Just 1 product for smoothing and repairing concrete surfaces
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 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 (≥ 2 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 R4 by trowel

Floating the surface of Planitop Smooth & Repair R4 to create a smooth finish
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**.
- 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”).
- The special 25 kg vacuum-packed polyethylene bags allow the product to be stored outside. Contact with the atmosphere and rain have no affect on the product’s characteristics.
Planitop Smooth & Repair R4

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 such as buffer walls, cornices and the front edges of balconies as long as the base concrete is in good condition.
- Quickly smoothing over surface defects in cast concrete, such as deep gravel clusters, spacer holes, construction joints, etc. before painting the surface.
- Repairs and structural strengthening of concrete by integrating with mortar.
- Repairs to prefabricated concrete members and elements.
- Repairs to concrete damaged by rusty rebar due to carbonation and/or chloride penetration.
## 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>+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>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>Thermal compatibility with freeze/thaw cycles with de-icing salts (EN 13687/1) after 50 cycles measured as adhesion according to EN 1542:</td>
<td>≥ 2 MPa</td>
</tr>
<tr>
<td>Capillary absorption (EN 13057)</td>
<td>≤ 0.5 kg/m² • h⁰.⁵</td>
</tr>
<tr>
<td>Impermeability expressed as coefficient of permeability to free water (EN 1062-3):</td>
<td>W &lt; 0.1 kg/m² • h⁰.⁵</td>
</tr>
<tr>
<td>Class III (low permeability) according to EN 1062-1</td>
<td></td>
</tr>
<tr>
<td>Permeability to water vapour – equivalent air thickness S₀ (EN ISO 7783-1):</td>
<td>S₀ &lt; 5 m</td>
</tr>
<tr>
<td>Class I (permeable to water vapour)</td>
<td></td>
</tr>
<tr>
<td>Resistance to accelerated carbonation (EN 13295):</td>
<td>&lt; reference concrete</td>
</tr>
<tr>
<td>Crack resistance (“O-Ring Test”):</td>
<td>no cracks after 180 days</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 polyethylene bags</td>
</tr>
<tr>
<td>Consumption:</td>
<td>approx. 17 kg/m² per cm of thickness</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.
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 R4.
- When Mapetard ES is added to the mixing water for Planitop Smooth & Repair R4, 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.
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.
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
Concrete Substrate

One-component corrosion-inhibiting cement mortar Mapefer 1K

R2-class, rapid-setting, thixotropic, fibre-reinforced, cementitious mortar for repairing and smoothing

Planitop Smooth & Repair

Water-based undercoat Malech

Protective elastic paint Elastocolor Paint

Repair

Concrete Substrate

Mapefer 1K

Inhibiting cement mortar

Planitop Smooth & Repair

Malech

Water-based undercoat

Elastocolor Paint

1

2

3

4

5

6
Where to use

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

Mixing Planitop Smooth & Repair
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 of setting cementitious mortar, it extends the excellent inherent workability of the mortar by 15-20 minutes.

Adding Planitop Smooth & Repair to the mixing water admixed with Mapetard ES
### Technical data

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<td><strong>Consumption:</strong></td>
<td>approx. 15 kg/m² per cm of thickness (for 5 kg bags)</td>
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<td><strong>Packaging:</strong></td>
<td>25 kg vacuum-packed polyethylene bags/boxes</td>
</tr>
<tr>
<td><strong>Class:</strong></td>
<td>Class A1 (guessable to Class I (guessable) according to EN 1067-1)</td>
</tr>
<tr>
<td><strong>Reaction to fire (EN 13501-1):</strong></td>
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<tr>
<td><strong>Permeability to water vapour – equivalent air permeability measured as coefficient of capillary absorption (EN 13027):</strong></td>
<td>$W &lt; 0.1$ kg/m² • h&lt;sup&gt;0.5&lt;/sup&gt;</td>
</tr>
<tr>
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<td>Class III (low permeability) according to EN 1062-1</td>
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<td></td>
<td>Reaction to fire after 28 days (EN 1187):</td>
</tr>
<tr>
<td></td>
<td>$W &lt; 0.1$ kg/m² • h&lt;sup&gt;0.5&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
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(*) 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.
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 horizontal and vertical concrete surfaces, suitable for repairing water;

• Quick repairs to deteriorated parts in concrete and the corners of water;

• Quick smoothing over surface defects in cast concrete such as crevices, spatter holes, construction joints, etc. before painting;

• Quickly smoothing over surface defects in cast concrete;

• Repairs to deteriorated parts in concrete;

• Repairing pre-cast concrete structures such as skirt roofs and producing decorative elements;

• Repainting and smoothing over concrete mouldings on civil buildings;

• Repairing pre-cast concrete structures.

Planitop Smooth & Repair

CE-Mark

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

CE-Mark

Product for rapid installation of floor and wall coverings.

Exclusive Mapei technology to identify products for rapid installation of floor and wall coverings.
Planitop Smooth & Repair

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 around 45-50 minutes after blending with Mapetard ES (at +20°C).

• Easy to create natural finishes with a smooth trowel during both the plastic phase and when hardened.

• Thermally compatible with freeze/thaw cycles measured as adhesion.

• Low water permeability.

• Planitop Smooth & Repair meets the minimum requirements of EN 1504-2 coating (C) according to principles MC and IR (Concrete surface protection systems)

• 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 1542-2 for non-structural RS-class mortars) 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

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.
- Very low emission level of volatile organic compounds (VOC).

Technical characteristics

- 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.
- Highly versatile, by adding Mapeitard ES its excellent inherent workability can be extended by a further 15-20 minutes.
- Excellent adhesion to both old concrete, if roughened, and wetted with water prior to application, and to rebar, especially when treated with Mapefer or Mapefer 1K.
- EMICODE EC1 Plus.
- EN 1504-1 R Plus.

Application of Planitop Smooth & Repair

Application of Planitop Smooth & Repair by trowel

Repair by trowel, Application of Planitop Smooth & Repair
Planitop
Smooth & Repair

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

Planitop
Smooth & Repair
product for smoothing and repairing concrete surfaces

Just 1