Mapetherm AR1 Light

One-component, lightweight cementitious mortar for bonding and reinforcing insulating panels and thermal insulation systems

EVERYTHING’S OK WITH MAPEI

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Mapetherm AR1 Light
ONE-COMPONENT LIGHTWEIGHT CEMENTITIOUS MORTAR
FOR THERMAL INSULATION
WITH SUPERIOR LIGHTNESS
AND ASTONISHING PERFORMANCE
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EVERYTHING’S OK WITH MAPEI

Lightweight
Strong
High Performance
Versatile

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Mapetherm AR1 Light is a fine, white powder with particles up to 1 mm in size made from cement, lightweight mineral aggregates, graded sand, synthetic resins and special additives according to a formulation developed in the MAPEI research laboratories.

When mixed with water, it forms a mortar with the following characteristics:

- Low viscosity and, therefore, good workability;
- High mechanical strength, up to twice that of lightweight skimming mortars with EPS;
- High thixotropic consistency: Mapetherm AR1 Light may be applied on vertical surfaces without running and without the risk of insulating panels slipping;
- Allows for thicker layers to be applied in one go (up to around 8/10 mm);
- Hardens without significant shrinkage.

Its special formulation allows thick layers to be applied in one go, so surfaces can be adjusted before installing cladding using the same product for three different phases (levelling the surface, bonding panels and reinforced skimming with embedded Mapetherm Net mesh).

Its special composition offers 2 to 3 times higher compressive strength compared with similar lightweight products with EPS and provides better workability when applied in both thin and thick layers. Mapetherm AR1 Light is classified A1 for its behaviour in the event of fire.

An image through an electron microscope showing a section of the honeycomb air pocket structure in the lightweight aggregate, which helps give Mapetherm AR1 Light its lightweight characteristics.

| Performance characteristics according to EN 998-1 |
|---------------------------------|----------------|----------------|
| Test method | Test results and conformity to the requirements |
| Dry bulk density (kg/m³) | EN 1015-10 | 1.13 |
| Compressive strength, after 28 days (N/mm²): | EN 1015-11 | 9.44 Category CS IV |
| Adhesion (concrete) (N/mm²): | EN 1015-12 | > 1 fakir made (FP) = B |
| Capillary water absorption (kg/m²·24h): | EN 1015-18 | 0.121 Category II |
| Water vapour permeability coefficient (μ) | EN 1015-19 | 13 |
| Thermal conductivity (λ) (W/mK): | EN 1745 | 0.31 |
| Reaction to fire: | EN 13901-1 | Barren class A1 |

**TECHNICAL CHARACTERISTICS:**

**VERSATILE**

- Hardens without significant shrinkage.
- Allows for thicker layers to be applied in one go (up to around 8/10 mm);
- High mechanical strength, up to twice that of lightweight skimming mortars with EPS;
- High thixotropic consistency: Mapetherm AR1 Light may be applied on vertical surfaces without running and without the risk of insulating panels slipping;
- Allows for thicker layers to be applied in one go (up to around 8/10 mm);
- Hardens without significant shrinkage.

**VERSATILE**

- Skimming: 1.20-1.40 kg/m² per mm of thickness
- Bonding insulating panels: 3.0-5.0 kg/m² according to the bonding technique used.
- Insulating panels slipping:
- Once the adhesive is completely dry, spread a layer of Mapetherm AR1 Light directly on the back of the panels using a notched trowel if the substrate is flat, or in a series of beads and spots if the masonry is uneven. After installing the panels, press them down well to guarantee good adherence with the substrate and check flatness with a straight edge.
- Used as a skimming mortar

**Strong**

- Strong performance
- High mechanical strength compared with similar lightweight products with EPS and

**VERSATILE**

- Versatile performance
- High thixotropic consistency: Mapetherm AR1 Light may be applied on vertical surfaces without running and without the risk of insulating panels slipping;
- Allows for thicker layers to be applied in one go (up to around 8/10 mm);
- Hardens without significant shrinkage.

**VERSATILE**

- Used as a skimming compound

**VERSATILE**

- Consumption
- Bonding insulating panels: 3.0-5.0 kg/m² according to the bonding technique used.
- Skimming: 1.20-1.40 kg/m² per mm of thickness (recommended thickness: approx. 4 mm).
Mapetherm AR1 Light has become Light. Thanks to research work carried out in the MAPEI laboratories, we are able to present an adhesive/skimming mortar that is more than 20% lighter.

Its lower weight combined with high impact strength make Mapetherm AR1 Light the ideal product for thick, reinforced skim coats on thermal insulation systems and for repairing deteriorated façades before applying paint cycles.

Its special composition allows thick layers to be applied in one go, so surfaces can be adjusted before installing cladding using the same product for three different phases (leveling the surface, bonding panels and reinforced skimming with embedded Mapetherm Net mesh).

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Mapetherm AR1 Light is classified A1 for its behaviour in the event of fire.

Its special composition offers 2 to 3 times higher compressive strength compared with similar lightweight products with EPS and provides better workability when applied in both thin and thick layers. Mapetherm AR1 Light is classified A1 for its behaviour in the event of fire.

TECHNICAL CHARACTERISTICS:

Mapetherm AR1 Light is a fine, white powder with particles up to 1 mm in size made from cement, lightweight mineral aggregates, graded sand, synthetic resins and special additives according to a formulation developed in the MAPEI research laboratories.

When mixed with water, it forms a mortar with the following characteristics:

- High thixotropic consistency; Mapetherm AR1 Light may be applied on vertical surfaces without running and without the risk of insulating panels slipping;
- Allows for thicker layers to be applied in one go (up to around 8/10 mm);
- Hardens without significant shrinkage.

Technical data

<table>
<thead>
<tr>
<th>Consistency:</th>
<th>powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour:</td>
<td>white</td>
</tr>
<tr>
<td>Application data (at +23°C, 50% R.H.):</td>
<td></td>
</tr>
<tr>
<td>Mixing ratio with water (%):</td>
<td>29 - 31</td>
</tr>
<tr>
<td>Application temperature:</td>
<td>from +5°C to +35°C</td>
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<tr>
<td>Waiting time before finishing operation:</td>
<td>15 days</td>
</tr>
<tr>
<td>Modulus of elasticity (N/mm²):</td>
<td>3,000</td>
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<tr>
<td>Flexural strength after 28 days (N/mm²):</td>
<td>approx. 4,0</td>
</tr>
<tr>
<td>In service temperature:</td>
<td>from −30°C to +90°C</td>
</tr>
</tbody>
</table>

Performance characteristics according to EN ISO 1181:2013

<table>
<thead>
<tr>
<th>Performance characteristic</th>
<th>Test method</th>
<th>Test results and conformity to the requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry bulk density (kg/m³):</td>
<td>EN 1015-10</td>
<td>1131</td>
</tr>
<tr>
<td>Press and temperature (kN/m²):</td>
<td>EN 1015-11</td>
<td>9.44 Category CS IV</td>
</tr>
<tr>
<td>Adhesive (concrete) (N/mm²):</td>
<td>EN 1015-12</td>
<td>&gt; 1 (failure mode (FM) = B)</td>
</tr>
<tr>
<td>Capillary water absorption (kg/m²·day):</td>
<td>EN 1015-18</td>
<td>0.121 Category W2</td>
</tr>
<tr>
<td>Water vapour permeability coefficient (g):</td>
<td>EN 1015-19</td>
<td>13</td>
</tr>
<tr>
<td>Thermal conductivity (λ10dry) (W/mK):</td>
<td>EN 1745</td>
<td>0.31</td>
</tr>
<tr>
<td>Reaction to fire:</td>
<td>EN 13816-1</td>
<td>Basic class A1</td>
</tr>
</tbody>
</table>

An image through an electron microscope showing a section of the honeycomb air pocket structure in the lightweight aggregate, which helps give Mapetherm AR1 Light its lightweight characteristics.

APPLICATION TECHNIQUE

PREPARATION OF THE SUBSTRATE

Substrates must be clean, compact and strong and have no traces of dust, loose material, grease, oil or other substances that could compromise adhesion. We recommend eliminating any particularly uneven areas in the surface by applying a preliminary layer of Mapetherm AR1 Light. Gypsum substrates (render applied by hand or with a rendering machine, pre-fabricated panels, etc.) must be perfectly dry and have no traces of dust and must be treated with Primer G prior to bonding insulating panels with Mapetherm AR1 Light.

USED AS A SKIMMING MORTAR

Because Mapetherm AR1 Light can be applied in thick layers, it may be used to cover and fill defects in render on the façade under maintenance, making it the ideal product to restore the flatness of the substrate before applying a thermal insulation system.

USED AS AN ADHESIVE

Spread a layer of Mapetherm AR1 Light directly on the back of the panels using a notched trowel if the substrate is flat, or in a series of beads and spots if the masonry is uneven. After installing the panels, press them down well to guarantee good adherence with the substrate and check flatness with a straight edge.

USED AS A SKIMMING COMPOUND

Once the adhesive is completely dry, spread an even layer of Mapetherm AR1 Light on the surface of the panels and embed Mapetherm Net alkali-resistant glass fibre mesh in the mortar. Press the Mapetherm Net mesh down into the mortar with a smooth trowel. Overlap adjacent pieces of mesh by at least 10 cm along the edges. After 12-24 hours, apply a second layer of Mapetherm AR1 Light skim-ming mortar to form a compact, even surface suitable for the final coating or covering, which must only be applied once the skimming layer has hardened and cured.

CONSUMPTION

- Bonding insulating panels: 3.0-5.0 kg/m² according to the bonding technique used.
- Skimming: 1.20-1.40 kg/m² per mm of thickness.
- Insulating panels slipping: 3.0-5.0 kg/m² according to the bonding technique used.
- Covering, which must only be applied once the skimming layer has hardened and cured.

PACKAGING

Mapetherm AR1 Light is available in 23 kg paper bags.
Mapetherm AR1 Light is a fine, white powder with particles up to 1 mm in size made from cement, lightweight mineral aggregates, graded sand, synthetic resins and special additives according to a formulation developed in the MAPEI research laboratories. When mixed with water, it forms a mortar with the following characteristics:

- Low viscosity and, therefore, good workability;
- High mechanical strength, up to twice that of lightweight skimming mortars with EPS;
- High thixotropic consistency: Mapetherm AR1 Light may be applied on vertical surfaces without running and without the risk of insulating panels slipping;
- Allows for thicker layers to be applied in one go (up to around 8/10 mm);
- Hardens without significant shrinkage.

Its special formulation allows thick layers to be applied in one go, so surfaces can be adjusted before installing cladding using the same product for three different phases (leveling the surface, bonding panels and reinforced skimming with embedded Mapetherm Net mesh).

**TECHNICAL CHARACTERISTICS:**

- **Product identity**
  - Consistency: powder
  - Colour: white
  - Application data (at +23°C, 50% R.H.):
    - Mixing ratio with water (%): 29 - 31
    - Application temperature: from +5°C to +35°C
    - Waiting time before finishing operation: 15 days
    - Final performance:
      - Modulus of elasticity (N/mm²): 3,000
      - Flexural strength after 28 days (N/mm²): approx. 4.0
      - In service temperature: from -30°C to +90°C

- **Performance characteristics according to EN 998-1**
  - Test method
  - Test results and conformity to the requirements
  - Dry bulk density (kg/m³): EN 1015-10
    - EN 1015-10
    - 1,131
  - Compressive strength after 28 days (N/mm²): EN 1015-11
    - EN 1015-11
    - 9.44 Category CS IV
  - Adhesion (concrete) (N/mm²): EN 1015-12
    - EN 1015-12
    - 1 Euroclass E2
  - Capillary water absorption (kg/m²·min0.5): EN 1015-18
    - EN 1015-18
    - 0.121 Category W2
  - Water vapour permeability coefficient (g):
    - EN 1015-19
    - 0.13
  - Thermal conductivity (μ): EN 1745
    - EN 1745
    - 0.31
  - Reaction to fire: EN 13501-1
    - EN 13501-1
    - EN 13501-1

- **Reaction to fire:** EN 13501-1
  - Fire classification: A1

- **Water vapour permeability coefficient (μ):** EN 1745
  - EN 1745
  - 0.31

- **Technical data**
  - Density:
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Once the adhesive is completely dry, spread an even layer of Mapetherm AR1 Light on the surface of the panels and embed Mapetherm Net alkali-resistant glass fibre mesh in the mortar. Press the Mapetherm Net mesh down into the mortar with a smooth trowel. Overlap adjacent pieces of mesh by at least 10 cm along the edges. After 12-24 hours, apply a second layer of Mapetherm AR1 Light skimming mortar to form a compact, even surface suitable for the final coating or covering, which must only be applied once the skimmed layer has hardened and cured.

**CONSUMPTION**

- Bonding insulating panels: 3.0-5.0 kg/m² according to the bonding technique used.
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