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**DIATHONITE EVOLUTION**

*Eco-friendly, thermal and breathable plaster*

Premixed plaster, fibre-reinforced with cork (grain size 0 - 3 mm – 0 - 0.12 in), clay, diatomaceous earth and natural hydraulic lime NHL 3.5. Natural compound, highly breathable, ready to use, for external thermal insulation and for indoor and outdoor dehumidification. It is a product that sums up cold insulation features of cork and heat insulation features of stones. The product has good fire reaction and it is recyclable as inert. Its porosity and the presence of lime make it extremely breathable, bacteriostatic and anti-mould.

**BENEFITS**

- Insulation against cold and warm (it guarantees good thermal lag dynamic parameters, up to 12 hours depending on the characteristic of the wall).
- Thanks to its high breathability it avoids mould and condensation.
- It absorbs and releases the excess humidity.
- Ideal for historic refurbishment.
- It preserves and protects masonry.
- Eco-friendly.
- Quick and easy construction system (thermal brick + thermal plaster).
- Very fast application system (by plastering pump).
- Made of natural hydraulic lime NHL 3.5 (EN 459-1).
- Excellent compression resistance.
- It can be applied to old plasters.
- Reaction to fire: class A1.
- Seamless insulation.

**YIELD**

- kg/m² 3.70 (±10%) per cm of thickness.
- lb/ft² 1.92 (±10%) per inch of thickness.

**COLOUR**

Light grey.

**APPLICATION FIELDS**

Premixed plaster for inside and outside, suitable for thermal insulation and dehumidification. It solves thermal bridges and mould caused by humidity, ensuring a healthy living space and a good living comfort. Moreover *Diathonite® Evolution* is a completely natural compound, ideal wherever the use of eco-friendly materials is required.

**PACKAGING**

18 kg (39.68 lb) paper bag.
Pallet: n° 60 paper bags (1080 kg – 2381 lb).

**STORAGE**

Store the product in its original containers tightly closed, away from sun, water, ice and kept at temperature higher than +5°C / +41°F. Storage time: 12 months.

**BENEFITS**

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### Technical data

<table>
<thead>
<tr>
<th>Featured</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yield</strong></td>
<td>3.7 (±10%) kg/m² per cm of thickness</td>
</tr>
<tr>
<td></td>
<td>1.92 (±10%) lb/ft² per inch of thickness</td>
</tr>
<tr>
<td>Aspect</td>
<td>powder</td>
</tr>
<tr>
<td>Colour</td>
<td>light grey</td>
</tr>
<tr>
<td>Specific weight</td>
<td>360 ± 20 kg/m³</td>
</tr>
<tr>
<td></td>
<td>22.5 ± 1.25 lb/ft³</td>
</tr>
<tr>
<td>Grain size</td>
<td>0 - 3 mm</td>
</tr>
<tr>
<td></td>
<td>0 - 0.12 in</td>
</tr>
<tr>
<td>w/c ratio</td>
<td>0.60 – 0.80 l/kg (0.72 – 0.96 gal U.S./lb)</td>
</tr>
<tr>
<td></td>
<td>11 - 14 l (2.91 – 3.70 gal U.S.) per paper bag (18 kg – 39.68 lb)</td>
</tr>
<tr>
<td>Application temperature</td>
<td>+5 /+30 °C / °F.</td>
</tr>
<tr>
<td>Working time (UNI EN 1015-9 – method B)</td>
<td>40 min</td>
</tr>
<tr>
<td>Drying time (T=23°C – 73.4°F ; R.H. 50%)</td>
<td>15 days</td>
</tr>
<tr>
<td>Storage</td>
<td>12 months</td>
</tr>
<tr>
<td>Packaging</td>
<td>18 kg - 39.68 lb paper bag</td>
</tr>
</tbody>
</table>

### LEED® Credits

**LEED for New Construction & Major Renovation, LEED for Schools, LEED for Core & Shell, v. 2009**

<table>
<thead>
<tr>
<th>Thematic area</th>
<th>Credit</th>
<th>Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; Atmosphere</td>
<td>EAp2 - Minimum energy performance</td>
<td>mandatory</td>
</tr>
<tr>
<td></td>
<td>EAc1 – Optimize Energy Performance</td>
<td>from 1 to 19</td>
</tr>
<tr>
<td>Materials &amp; Resources</td>
<td>MRC2- Construction Waste Management</td>
<td>from 1 to 2</td>
</tr>
<tr>
<td></td>
<td>MRC4 – Recycled Content</td>
<td>from 1 to 2</td>
</tr>
<tr>
<td></td>
<td>MRC5 – Regional Materials</td>
<td>from 1 to 2</td>
</tr>
<tr>
<td></td>
<td>MRC6 - Rapidly Renewable Materials</td>
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<tr>
<td>Indoor Environmental Quality</td>
<td>IEQc3.2 - Construction Indoor Air Quality Management Plan—Before Occupancy</td>
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</tr>
<tr>
<td></td>
<td>IEQc4.2 - Low Emitting Materials - Paints and Coatings</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IEQc11 - Mould Prevention*</td>
<td>1</td>
</tr>
</tbody>
</table>

**Thermal – acoustic insulation - Plasters**

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### DIATHONITE EVOLUTION

**Eco-friendly thermal and breathable plaster**

<table>
<thead>
<tr>
<th>Final performances</th>
<th>Unit</th>
<th>Regulation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal conductivity (λ)</td>
<td>0.045</td>
<td>W/mK</td>
<td>EN 1745</td>
</tr>
<tr>
<td>Thermal resistance (R) for 1 cm of thickness</td>
<td>0.222</td>
<td>m² K/W</td>
<td>10355</td>
</tr>
<tr>
<td>Thermal resistance (R) for 1 inch of thickness</td>
<td>3.205</td>
<td>ft² °F h/ BTU</td>
<td>ASTM C518</td>
</tr>
<tr>
<td>Specific heat (c)</td>
<td>1000</td>
<td>J/kgK</td>
<td>EN 1745</td>
</tr>
<tr>
<td>Thermal diffusivity (a)</td>
<td>0.114</td>
<td>m²/Ms</td>
<td>TS 11300-1</td>
</tr>
<tr>
<td>Vapour permeability coefficient</td>
<td>µ = 4</td>
<td>grains/h-ft²</td>
<td>EN ISO 12572</td>
</tr>
<tr>
<td>Water absorption by capillarity</td>
<td>0.40</td>
<td>kg/m² min⁻⁰·⁵</td>
<td>EN 1015 - 18</td>
</tr>
<tr>
<td>Height of water penetration (after 90 minutes)</td>
<td>40</td>
<td>mm</td>
<td>EN 1015 - 18</td>
</tr>
<tr>
<td>Compression resistance</td>
<td>2.7</td>
<td>N/mm²</td>
<td>EN 1015-11</td>
</tr>
<tr>
<td>Bending resistance</td>
<td>1.5</td>
<td>N/mm²</td>
<td>EN 1015-11</td>
</tr>
<tr>
<td>Dried mortar porosity</td>
<td>71.64%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adhesion onto the support (brick)</td>
<td>0.1 -</td>
<td>N/mm²</td>
<td>EN 1015-12</td>
</tr>
<tr>
<td>Adhesion to tuff</td>
<td>0.201</td>
<td>N/mm²</td>
<td>EN 1015-12</td>
</tr>
<tr>
<td>Adhesion on wood fibres panels</td>
<td>-</td>
<td>EN 1015-12</td>
<td>good</td>
</tr>
<tr>
<td>Adhesion of marble to Diathonite Evolution</td>
<td>0.241</td>
<td>N/mm²</td>
<td>EN 1015-12</td>
</tr>
<tr>
<td>Adhesion of stone to Diathonite Evolution</td>
<td>0.243</td>
<td>N/mm²</td>
<td>EN 1015-12</td>
</tr>
<tr>
<td>Secant modulus</td>
<td>742</td>
<td>N/mm²</td>
<td>6556</td>
</tr>
<tr>
<td>Fire reaction</td>
<td>class A1</td>
<td>EN 13501-1</td>
<td></td>
</tr>
</tbody>
</table>

*The above data, even if carried out according to regulated tests are indicative and they may change when specific site conditions vary.*
PREPARATION OF SUPPORT
Substrate must be completely hardened (correct drying) and resistant enough. The surface must be thoroughly clean, well consolidated, without debris or detaching parts.
Before the application it is recommended to cover window sills, doorsteps, window and door fixtures and any element that will not be covered by the plaster.

Brick
Primer is not needed, *Diathonite Evolution* can be applied directly to the substrate.

Concrete
In case of damaged or crumbly concrete, it must be restored with suitable cement mortar.
Iron bars can be treated with *Anticorrosive 2K* (see technical data sheet).
**Smooth**: apply *Aquabond* primer (see technical data sheet).
**Rough**: primer is not needed, apply the plaster directly to the substrate.

Cellular concrete
*Diathonite Evolution* can be applied over cellular concrete panels without primer.

Masonry
If necessary, clean the surface with water jet cleaner or brush the surface.
Check the masonry, restore damaged or not fixed bricks and stones.
If there are salts, apply *Diathonite Regularization* (see technical data sheet).
To uniform the substrate, use a lime based mortar to keep breathability.

Old plaster
Make sure that the plaster is compact and well bonded to the substrate. If not, it is recommended to partially or completely remove it.
In case of salts, remove the damaged plaster and apply *Diathonite Regularization* (see technical data sheet).
With painted plasters, given the wide range of paints present on the market, it is recommended to perform an adhesion test to verify if *Aquabond* primer is needed (see technical data sheet).

Mixing
Based on the absorption degree of the substrate and on the condition of the environment, it is recommended to measure out the right amount of water that is needed to obtain the correct adhesion. The amount of water indicated is merely indicative.
• If the product is mixed with a concrete mixer or with a mixing drill, add 11-14 l (2.91 – 3.70 gal U.S.) of clean water per bag of *Diathonite Evolution* (18 kg – 39.68 lb). **Do not mix the material for more than 3-4 minutes.**
• The mixture must be foamy.
• Do not add anything else to the mixture.
**DIATHONITE EVOLUTION**

*Eco-friendly thermal and breathable plaster*

---

**APPLICATION**

**Application by hand**

1. It is **fundamental** to wet the surface, in particular during summer season and in case of walls exposed to sun. If the surface was treated with a primer, it is not necessary to wet the substrate.

2. Perform points or reference bands to obtain the required thickness. Points or reference bands can be created with the plaster *Diathonite Evolution*, or it is possible to use steel or wood edging. In this case, these have to be removed as soon after the application of the last layer.

3. Corner sections can be placed together with reference bands, anyway before the application of the last coat.

4. To secure corner and angles, in multi floor application, use steel corner beads. These must be fixed with *Diathonite Evolution* to avoid thermal bridges.

5. Apply a first coat of *Diathonite Evolution* of about 1.5 cm (5.91 in) of thickness by trowel.

6. Apply successive layers when the one below is superficially dry (after about 12/24 hours), up to the required thickness. Each layer must be at max 2.0 cm (0.79 in).

7. Wet the plaster before the application of each layer.

8. Beyond 6.00 cm (2.36 in) of thickness it is recommended the use *Polites 140* plaster mesh (see technical data sheet). The net must be drowned into the plaster at about half of the total thickness and, if necessary, it must be used irrespective of the thickness even in case of application on panels, wood, plasterboards or to unstable substrates.

9. On pillar or beams, the mesh must stick out on both sides of the concrete supports of at least 15 cm (5.91 in).

10. When smoothing the plaster, do not push *Diathonite Evolution* that much against the wall. This is required to preserve the porosity of the plaster. To smooth, use a strike off bar, in horizontal and vertical way, to obtain a regular surface.

**Application by pump**

*Diathonite Evolution* can be applied using plastering machine for light weight pre-mixed products. The set up of the machine varies accordingly to the specific type of pump used.

It is possible to use plastering pump such as three phase PFT G4, equipped with new stator D6-3, hollowed mixing blades (semi-closed), and conical material holder hose with a diameter of 35 / 25 mm (1.38 / 0.98 in), 14 to 16 mm (0.55 to 0.63 in) nozzle.

1. It is **fundamental** to wet the surface, in particular during summer season and in case of walls exposed to sun. If the surface was treated with a primer, it is not necessary to wet the substrate.

2. Perform points or reference bands to obtain the required thickness. Points or reference bands can be created with the plaster *Diathonite Evolution*, or it is possible to use steel or wood edging. In this case, these have to be removed as soon after the application of the last layer.

3. Corner sections can be placed together with reference bands, anyway before the application of the last coat.

4. To secure corner and angles, in multi floor application, use steel corner beads. These must be fixed with *Diathonite Evolution* to avoid thermal bridges.

5. Load the content of the bags inside the hopper and adjust the flow-meter of the pump machine, starting with a high water flow and reducing it until reaching the most suitable consistency for a perfect product adhesion.

6. Spray *Diathonite Evolution* bottom up.

7. Apply a first coat of *Diathonite Evolution* as regularization, with a maximum thickness of 1 – 1.5 cm (0.39 – 0.59 in). Successive layers must be applied with thickness not higher than 2.0 – 2.5 cm (0.79 – 0.98 in).

8. Any successive layers must be applied when the previous one is superficially dry and visually lighter in colour (after about 12/24 hours). Wet the plaster before the application of any layer.

9. Spray *Diathonite Evolution* with few interruptions. Otherwise place the nozzle into water to avoid any clumps.

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**Thermal – acoustic insulation - Plasters**

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12. When smoothing the plaster, do not push Diathonite Evolution that much against the wall. This is required to preserve the porosity of the plaster. To smooth, use a strike off bar, in horizontal and vertical way, to obtain a regular surface.

**Drying Time**
At +23°C / +73.4°F and 50% relative humidity level, the product dries in 10-15 days.
- Drying time is influenced by humidity level and by temperature and may significantly change.
- If Diathonite Evolution is applied with higher thickness, drying time will significantly increase.
- Protect Diathonite Evolution plaster from ice, direct sunlight and wind.
- In case of high temperature, direct sunlight or strong wind, it is necessary to wet the plaster 2/3 times per day for the first 2/3 after the application.
- At temperature higher than 28°C / 82°F, wet the plaster every 2 hours to avoid cracks.
- If applied internally, ventilate as much as possible the room during application and drying.

To finish the plaster it is possible to apply, both inside and outside, the following skim coats: Argacem HP (to obtain a rough texture with 0-0.9 mm / 0 – 0.35 in grain size), Argacem MP (to obtain a medium rough texture with 0-0.5 mm / 0 – 0.20 ingrain size) and Argacem Ultrafine for a perfectly smooth texture. For the application of these skim coats please see technical data sheets.

On top of skim coat, apply externally Diathonite Cork Render, Acrilid Protect Coating or any breathable and water repellent finish. Internally, it is possible to use Decork, C.W.C. Stop Condense, Limepaint or breathable paints.

**Suggestions**
- Do not apply at temperature (both of the substrate and of the environment) lower than +5°C / +41°F and higher than +30°C / +86°F.
- During summer season, apply the product in the cooler hours of the day, away from sun.
- Do not apply with imminent threat of rain or ice, in conditions of strong fog or with relative humidity higher than 70%.
- If applied on the ceiling, Diathonite Evolution must be applied with plastering machine. We do not recommend hand application.
- If applied internally, it is necessary that the external surface does not absorb water. Otherwise, treat the surface with BKK or BKK Eco.
- In presence of exposed walls, apply a siloxane, transparent, breathable and water-repellent product such as BKK or BKK Eco.

**Cleaning**
Wash tools with water before product hardens.

**Safety**
While handling, respect the instructions described in product safety data sheet and always use protective gloves and anti-dust mask.