

DIATHONITE SISMACTIVE

Lime-based M10 structural thermal mortar for structural reinforcement of masonry with CRM systems.

Cork-based thermal mortar (particle size 0-3 mm / 0-0.11 in), composed of clay, diatomaceous powders and hydraulic binder. Natural, ready-to-use compound, it is suitable for the consolidation of masonry structures and vaults, through the construction of reinforced repointing systems. Designed for the structural reinforcement of masonry buildings with *Composite Reinforced Mortar (CRM)* systems.

BENEFITS

- Thermal and structural mortar.
- M10 compressive strength, according to UNI EN 998-2.
- *Low VOC emissions* product.
- Natural and environmentally friendly product.
- Ideal for historical buildings.
- Product with double CE marking (EN 99.8-1, EN 998-2).

YIELD

6,0 kg/m² (± 10%) per cm of thickness.

3.12 lb/ft² (± 10%) per inch of thickness.

COLOUR

Gray.

PACKAGING

25 kg paper bag.

Pallet: n° 50 bags (1250 kg).

APPLICATION FIELDS

Ready-to-use mortar for indoor and outdoor applications. Ideal for structural reinforcement of masonry buildings using CRM technology. *Diathonite Sismactive* is used in combination with a reinforcement mesh (such as *Polites AR 330*), fiberglass connectors (see *Elites L* or *Elites F*) and a resin, such as *Sisabond* (see data sheets).

STORAGE

Store the product in the original packaging perfectly closed, in well ventilated environments,

adequately protected from the sun, water, frost and maintained at temperatures between +5 °C (+ 41°F) and +35 °C (+ 95°F). Storage time: 12 months.

PREPARATION OF THE SUPPORT

The support must be completely hardened and resistant enough. The surface must be thoroughly cleaned, dry, well-established, without crumbly and inconsistent parts, perfectly levelled, and free of dust and/or dirt. Any traces of oils, fats, and waxes must be previously removed. Demolish plaster with inconsistent parts and/or non-cohesive parts.

MIXING

Depending on the support water absorption degree and the environmental conditions it is recommended to dose the right amount of water necessary to obtain the correct adhesion.

The amount of water specified is indicative.

- If applied **by hand**, knead in *concrete mixer* or with *drill mixer* adding 11 - 12,5 L of clean water for each bag of *Diathonite Sismactive* (25 kg). **Do not mix the compounds in the mixer for more than 3-4 minutes.**
- If applied by **plastering machine** for lightened premixed plasters, use three-phase plastering machines (**type PFT G4**)



THERMO STRUCTURAL INSULATION - mortars

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equipped with new stator/rotor D6-3, mixer with mixing shaft (semi-closed), and conical material holder hose with diameter 35/25 mm, nozzle 14 or 16 mm.

- Load the contents of the bags inside the hopper and adjust the flow meter of the machine: firstly, set it to **400-600 L/h** to moisten the tube, and then adjust the flow to **300-350 L/h** to proceed with the application.
- Never add external products to the mixture.

APPLICATION IN THE CRM STRUCTURAL REINFORCEMENT SYSTEMS

Application on one side of the masonry - AR fiberglass connector *Elites F1*

1. Wash and wet the surface of the substrate until saturated. If necessary, rebuild parts of missing or particularly damaged masonry.
2. To set up the connectors, proceed with drilling the guide holes for a depth of 2/3 of the masonry thickness. The number of holes should be planned beforehand, designed according to the *Elites F1* diameter and never be less than 4/m².
The depth of the holes must be calculated according to the thickness of the masonry. The slope of the guideline holes must be kept at 45° and the expected diameter for each hole must be equal to that of the connector increased by at least 4 mm ($d_{holes} = d_{connector} + 4 \text{ mm}$). Holes are to be drilled in those compact areas of the masonry, preferably with rotating tools.
3. After making the holes, remove dust and the material formed with compressed air, then insert preformed inert cylindrical tools into the holes for their subsequent detection.
4. Apply a first layer of *Diathonite Sismactive*, by hand or by machine, taking care not to go over the holes with the mortar. If applied with plastering machine, it is recommended to spray the product downside up, with as few interruptions as possible.
5. Proceed with the installation of the mesh. Place *Polites AR 330* into the first layer of *Diathonite Sismactive* when it is still fresh, making sure to partially incorporate it into

the mortar. We recommend an overlap of the mesh bands for about 15 - 20 cm in order to ensure mechanical continuity. *Polites AR 330* shall not be crinkled or blistered.

6. When the mortar is still fresh, remove the preformed inert cylindrical tools, inject the vinyl ester resin namely *Sismabond* into each hole and insert a pre-formed *Elites F1* fiberglass connector.
7. Carefully splay the “tassel” part of the connector –which is the only part not inserted in the hole–, and drown the glass fibres in the still fresh mortar.
8. Wait for the first layer of *Diathonite Sismactive* to dry (12-24 h depending on weather conditions), then apply the second layer by hand or by machine.

Application on one side of the masonry - GFRP fiberglass connector *Elites L*

1. Wash and wet the surface of the substrate until saturated. If necessary, rebuild parts of missing or particularly damaged masonry.
2. To set up the connectors, proceed with drilling the guide holes for a depth of 2/3 of the masonry thickness. The number of holes must be planned in advance, calculated on the diameter of *Elites L*, and never less than 4/m². The depth of the holes must be calculated according to the thickness of the masonry. In addition, the holes must be kept perpendicular to the wall, and the expected diameter for each hole must be equal to that of the connector increased by at least 4 mm ($d_{holes} = d_{connector} + 4 \text{ mm}$). Holes are to be drilled in those compact areas of the masonry, preferably with rotating tools.
3. After drilling the hole, remove all dust and loose material with compressed air, then insert preformed inert cylindrical tool into the holes for their subsequent detection.
4. Apply a first layer of *Diathonite Sismactive* (see data sheet), by hand or by machine, making sure not to pass with the mortar over the holes. If applied with plastering machine, it is recommended to spray the product downside up, with few interruptions.
5. Proceed with the installation of the mesh.

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Place *Polites AR 330* into the first layer of *Diathonite Sismactive* when it is still fresh, making sure to partially incorporate it into the mortar. We recommend an overlap of the mesh bands for about 15 - 20 cm in order to ensure mechanical continuity. *Polites AR 330* shall not be crinkled or blistered.

6. When the mortar is still fresh, remove the cylindrical tools from the guidelines holes previously drilled, then inject the *Sismabond* vinyl ester resin (see data sheet) into each hole.
7. Afterwards, insert a preformed *Elites L* fiberglass connector by its "long" side into each hole, making sure to direct the short side downwards.
8. Rotate the short side of the *Elites L* connector by 45°, making it fall on the diagonal of the mesh
9. Wait for the first layer of *Diathonite Sismactive* to dry (12-24 h depending on weather conditions), then apply the second layer by hand or by machine.

Application from side to side of the masonry - AR fiberglass connector *Elites F2*

1. Wash and wet the surface of the substrate until saturated. If necessary, rebuild parts of missing or particularly damaged masonry.
2. To set up the connectors, proceed with drilling the guide holes from one side to the other of the masonry. The number of holes must be planned in advance, calculated on the diameter of *Elites F2*, and never less than 4/m². The depth of the holes must be calculated according to the thickness of the masonry. In addition, the holes must be kept perpendicular to the wall, and the expected diameter for each hole must be equal to that of the connector increased by at least 4 mm ($d_{holes} = d_{connector} + 4 \text{ mm}$). Holes are to be drilled in those compact areas of the masonry, preferably with rotating tools.
3. After drilling the hole, remove all dust and loose material with compressed air, then insert preformed inert cylindrical tool into the holes for their subsequent detection.

4. Apply a first layer of *Diathonite Sismactive* (see data sheet), by hand or by machine, making sure not to pass with the mortar over the holes. If applied with plastering machine, it is recommended to spray the product downside up, with few interruptions.
5. Proceed with the installation of the mesh. Place *Polites AR 330* into the first layer of *Diathonite Sismactive* when it is still fresh, making sure to partially incorporate it into the mortar. We recommend an overlap of the mesh bands for about 15 - 20 cm in order to ensure mechanical continuity. *Polites AR 330* shall not be crinkled or blistered.
6. When the mortar is still fresh, remove the cylindrical tools from the guidelines previously drilled, inject the *Sismabond* vinyl ester resin (see data sheet) into each hole and insert a preformed *Elites F2* fiberglass connector by pushing it through the wall.
7. Carefully splay both the "tassels" part of the connector –which are the only parts not inserted in the hole–, and drown the glass fibers in the still fresh mortar.
8. Wait for the first layer of *Diathonite Sismactive* to dry (12-24 h depending on weather conditions), then apply the second layer by hand or by machine.

Application on both sides of the masonry – double GFRP fiberglass connector *Elites L*

1. Wash and wet the surface of the substrate until saturated. If necessary, rebuild parts of missing or particularly damaged masonry.
2. To set up the connectors, proceed with drilling the guide holes from one side to the other of the masonry. The number of holes must be planned in advance, calculated on the total diameter of *Elites L*, and never less than 4/m². In addition, the holes must be kept perpendicular to the wall. Holes are to be drilled in those compact areas of the masonry, preferably with rotating tools.
3. After drilling the hole, remove all dust and loose material with compressed air, then insert preformed inert cylindrical tool into the holes for their subsequent detection.

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4. Apply a first layer of *Diathonite Sismactive* (see data sheet), by hand or by machine, making sure not to pass with the mortar over the holes. If applied with plastering machine, it is recommended to spray the product downside up, with few interruptions.
5. Proceed with the installation of the mesh. Place *Polites AR 330* into the first layer of *Diathonite Sismactive* when it is still fresh, making sure to partially incorporate it into the mortar. We recommend an overlap of the mesh bands for about 15 - 20 cm in order to ensure mechanical continuity. *Polites AR 330* shall not be crinkled or blistered.
6. When the mortar is still fresh, remove the cylindrical tools from the guideline holes previously drilled, then inject the Sismabond vinyl ester resin (see data sheet) into each hole. Afterwards, insert a preformed *Elites L* fiberglass connector by its "long" side into each hole, making sure to direct the short side downwards.
7. Rotate the short side of the *Elites L* connector by 45°, making it fall on the diagonal of the mesh.
8. Wait for the first layer of *Diathonite Sismactive* to dry (12-24 h depending on weather conditions), then apply the second layer by hand or by machine.

DRYING TIME

At a temperature of +23 °C (+74 °F) and relative humidity of 50%, the product dries in 10-15 days.

- Drying times are influenced by the relative humidity of the environment, temperature and physical state of the substrate (wet or dry), and may also vary significantly.
- Protect *Diathonite Sismactive* in the curing phase from frost, direct insolation and wind.
- In case of high temperatures, hot sun or strong ventilation it is necessary to wet the plaster even 2/3 times a day for the first 2/3 days after application.
- At temperatures above 28 °C (+ 83 °F) wet the plaster every 2 hours to avoid cracks.

- If applied indoors, aerate as much as possible the environment during application and during drying of the product.

SUGGESTIONS

- Do not apply at environmental temperature or at support temperature lower than +5°C (34°F) and higher than +35°C (95°F).
- During summer season, apply the product in the cooler hours of the day, away from sunlight.
- Do not apply with imminent threat of rain or frost, in conditions of strong fog or with relative humidity higher than 70%.
- Where it is considered necessary, and only after contacting the technical office of the Diasen, it is possible to proceed with the application, by hand or by machine, of a first layer of *Diathonite Sismactive* as a rough coat.
- For applications with plastering machine, and in case of interruptions during the realization of the coat, it is recommended to soak the nozzle to avoid the formation of a material cap in the gun. Whenever there are doubts about the consistency of the substrate, it is recommended to make an adhesion test area.
- The test area should allow to verify any chemical, mechanical and physical incompatibilities between *Diathonite Sismactive* and the support.

CLEANING

The equipment used can be washed with water before hardening of the product.

SAFETY

While handling, always use personal protective equipment (PPE) and respect the instructions described in product safety data sheet.

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* The above data, even if carried out according to standard test methods, are indicative and may be subject to changes to the specific site conditions.

Technical Data *

| Features | | Unit |
|---|---|--------------------|
| Yield | 6,00 (± 10%) for each cm of thickness | kg/m ² |
| | 3.12 (± 10%) per inch of thickness | lb/ft ² |
| Aspect | powder | - |
| Colour | light grey | - |
| Density | 600 ± 10% | kg/m ³ |
| | 37.46 ± 0.62 % | lb/ft ³ |
| Grain size | 0 – 3 | mm |
| | 0 - 0.12 | in |
| Water to add to the mixture | 0.45 – 0.50 (11 - 12,5 L for each 25 kg bag) | L/kg |
| | 0.054 – 0.060 gal (US) per paper bag (55.12) | gal (US) / lb |
| Minimum thickness for application | 1.5 / 0.6 | cm / inches |
| Application thickness of CRM systems | 3 - 5 / 1.18 – 1.96 | cm / inches |
| Application temperature | +5 / +30 | °C |
| | +41 / +95 | °F |
| Workability time (UNI EN 1015-9 – method B) | 40 | min |
| Drying time (T=23°C; U.R. 50%) | 10-15 | days |
| Storage | 12 | months |
| Packaging | 25 kg (55.11 lb) paper bag | kg |


| Final performances | | Unit | Regulation | Results |
|----------------------------|----------------|---------------------------|-----------------------------|----------------|
| Compressive strength | 10.1 | N/mm ² | EN 998-1 | category CS IV |
| | 1464.88 | lbf/in ² (psi) | EN 998-2 | M 10 |
| Flexural strength | 2.3 | N/mm ² | UNI EN 1015-11 | - |
| | 333.59 | lbf/in ² (psi) | | |
| Thermal conductivity (λ) | 0.065 | W/mK | UNI EN 12664 | - |
| Specific heat capacity (c) | 1000 | J/kgK | UNI EN 1745 UNI EN 10456 | - |
| | 0.239 | kcal/kg °C | - | - |
| Hardened material weight | 800 ± 10% | kg/m ³ | - | - |
| | 49.94 ± 0.62 % | lb/ft ³ | | |

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| Indoor Air Quality (IAQ) Certification | | |
|--|---|---|
| Evaluation of the results | | |
| Regulation or protocol | Version of regulation or protocol | Conclusion |
| French VOC Regulation | Decree of March 2011 (DEVL1101903D) and Arrêté of April 2011 (DEVL1104875A) modified in February 2012 DEVL1133129A) |  |
| French CMR components | Regulation of April and May 2009 (DEVP0908633A and DEVP0910046A) | Pass |
| Italian CAM Edilizia | Decree 11 October 2017 (GU n.259 del 6-11-2017) | Pass |
| AgBB/ABG | Anforderungen an bauliche Anlagen bezüglich des Gesundheitsschutzes, ABG May 2019, AgBB August 2018 | Pass |
| Belgian Regulation | Royal decree of May 2014 (C-2014/24239) | Pass |
| Indoor Air Comfort® | Indoor Air Comfort 7.0 of May 2020 | Pass |
| Blue Angel (DE-UZ 113) | DE-UZ 113 for “Low-Emission Floor Covering Adhesives and other Installation Materials” (Version January 2019) | Pass |
| BREEAM International | BREEAM International New Construction v2.0 (2016) | Exemplary Level |
| BREEAM® NOR | BREEAM-NOR New Construction v1.2 (2019) | Pass |
| LEED® | “Low-Emitting Material” according to the requirements of LEED v4.1 | Pass |
| CDPH: Classroom scenario | CDPH/EHLB/Standard Method V1.2. (January 2017) | Pass |



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