1802335

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.

CE

Diasen srl
Zona Industriale Berbentina, 5 Sassoferrato ANCONA
11
EN 998-1 - Specification for mortar for masonry - Part 1: Mortar for internal and external plaster

Thermal conductivity:	λ=0.045 W/mK (category T1)
Compression resistance:	2.7 N/mm^2 (391.6 lbf/in^2) (category CS II)
Fire reaction:	class A1
Vapour permeability value:	μ=4
Capillary water absorption:	0.40 kg/m^2 min^{0,5} (category W1)
Adhesion:	0.10 N/mm^2 (14.5 lbf/in^2) – FP:B
Density:	360±20 kg/m^3 (22.5±1.25 lb/ft^3)

Durability freeze-thaw cycle): analysis based on current regulations of the place where the mortar is used.

YIELD

kg/m^2 3.70 (±10%) per cm of thickness.
lb/ft^2 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.

CONTRIBUTES TO LEED CREDITS

NON TOXIC

LOW ECOLOGICAL IMPACT

ECOSOSTENIBILE eco

For application video, product page, safety data sheet and other information.

Thermal – acoustic insulation - Plasters

DIASEN GREEN BUILDING FUTURE

DIATHONITE EVOLUTION

Eco-friendly thermal and breathable plaster

Technical data

Featured		Unit
Yield	3.7 (±10%) kg/m^2 per cm of thickness 1.92 (±10%) lb/ft^2 per inch of thickness	kg/m^2 lb/ft^2
Aspect	powder	-
Colour	light grey	-
Specific weight	360 ± 20 22.5 ± 1.25	kg/m^3 lb/ft^3
Grain size	0 – 3 0 - 0.12	mm in
w/c ratio	0.60 – 0.80 l/kg (0.72 – 0.96 gal U.S./lb) 11 - 14 l (2.91 – 3.70 gal U.S.) per paper bag (18 kg – 39.68 lb)	l/kg gal U.S. / lb
Application temperature	+5 /+30 +41/+86	°C °F.
Working time (UNI EN 1015-9 – method B)	40	min
Drying time (T=23°C – 73.4°F ; R.H. 50%)	15	days
Storage	12 months	months
Packaging	18 kg - 39.68 lb paper bag	kg lb

LEED® Credits

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

Thematic area	Credit	Point
Energy & Atmosphere	EAp2 - Minimum energy performance	mandatory
	EAc1 – Optimize Energy Performance	from 1 to 19
Materials & Resources	MRc2- Construction Waste Management	from 1 to 2
	MRc4 – Recycled Content	from 1 to 2
	MRc5 – Regional Materials	from 1 to 2
	MRc6 - Rapidly Renewable Materials	1
Indoor Environmental Quality	IEQc3.2 - Construction Indoor Air Quality Management Plan—Before Occupancy	1
	IEQc4.2 - Low Emitting Materials - Paints and Coatings	1
	IEQc11 - Mould Prevention*	1

DIATHONITE EVOLUTION

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Final performances		Unit	Regulation	Result
Thermal conductivity(λ)	0.045	W/mK	EN 1745	category T1
Thermal resistance (R) *for 1 cm of thickness*	0.222	m^2 K/W	10355	-
Thermal resistance (R) *for 1 inch of thickness*	3.205	ft^2 °F h/BTU	ASTM C518	-
Specific heat (c)	1000 0.239	J/kgK kcal/kg °C	EN 1745 EN 10456 -	-
Thermal diffusivity (a)	0.114	m^2/Ms	TS 11300-1	-
Vapour permeability coefficient	μ = 4 WVT = 14	- grains/h·ft^2	EN ISO 12572 ASTM E96	highly breathable
Water absorption by capillarity	0.40	kg/m^2 $min^{0,5}$	EN 1015 - 18	category W1
Height of water penetration (after 90 minutes)	40 1.57	mm in	EN 1015 - 18	-
Compression resistance	2.7 391.6 56390	N/mm² lbf/in^2 (psi) psf	EN 1015-11 ASTM C349	category CS II
Bending resistance	1.5 217.6 31338	N/mm^2 lbf/in^2 (psi) psf	EN 1015-11 ASTM C348	-
Dried mortar porosity	71.64% (17.83% macro-porosity and 54.94% micro-porosity)	-	-	-
Adhesion onto the support (brick)	0.1- break type B (mortar break) 14.5	N/mm² lbf/in^2	EN 1015-12	mortar break
Adhesion to tuff	0.201 29.15	N/mm^2 lbf/in^2	EN 1015-12	-
Adhesion on wood fibres panels	-	-	EN 1015-12	good
Adhesion of marble to *Diathonite Evolution*	0.241 34.95	N/mm^2 lbf/in^2	EN 1015-12	-
Adhesion of stone to *Diathonite Evolution*	0.243 35.24	N/mm^2 lbf/in^2	EN 1015-12	-
Secant modulus	742 107618	N/mm² lbf/in^2	6556	highly elastic
Fire reaction	class A1	-	EN 13501-1	-

* The above data, even if carried out according to regulated tests are indicative and they may change when specific site conditions vary.

Thermal – acoustic insulation - Plasters

DIASEN® GREEN BUILDING FUTURE

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).

Onto smooth plaster, apply *Aquabond* primer (see technical data sheet) or, if needed, rough the surface.
Onto rough plaster, primer is not needed and *Diathonite Evolution* can directly be applied to the substrate.

Panels

Apply *Diathonite Evolution* directly over non treated cork panels. Given the wide range of panels present on the market, it is recommended to verify the adhesion or if *Aquabond* primer is needed (see technical data sheet).
Take care to put the panels close to each other.

Wood

Apply *Diathonite Evolution* directly over non treated wood.
In case of smooth or treated wood, treat the surface with the primer *Aquabond* (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.

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.

10. 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.

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

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.

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