

## THERMAL – ACOUSTIC INSULATION

# DIATHONITE EVOLUTION

*Eco-friendly thermal, acoustic and dehumidifying plaster*

Thermal premixed plaster, fiber-reinforced with cork (gran. 0-3 mm), clay, diatomaceous earth and hydraulic lime NHL 3.5. Natural compound, highly breathable, ready to use, for thermal-acoustic insulation and dehumidifying projects, suitable both for inside and outside. It is the only product that sums up cold insulation features of cork and warmth insulation features of stones. The product has good fire resistance and it is recyclable as inert. Its porosity and the presence of lime makes it extremely breathable, bacteriostatic and anti-mould.

## BENEFITS

- Insulation against cold and warmth (it guarantees good thermal lag dynamic parameters, up to 12 hours depending on the characteristic of the wall).
- Highly breathable.
- Fire resistant.
- Eco-friendly.
- It replaces the common double-layer wall.
- Quick construction system (thermal brick + plaster).
- Very fast application system (by plastering pump).
- It does not crack between pillar and wall.

## APPLICATION FIELDS

Ready to use plaster, both for inside and outside. Suitable for thermal insulation walls and sound absorbing coatings. It solves thermal bridge and mould problems caused by humidity condensation, ensuring a healthy living space and a good living comfort. Moreover *Diathonite®* is a completely natural compound, ideal wherever the use of eco-friendly materials is required.

## YIELD

kg/m<sup>2</sup> 3,70 (±10%) per cm of thickness.  
lb/ft<sup>2</sup> 1,92 (±10%) per inch of thickness.

## COLOUR

Grey.

## PACKAGING

18 Kg paper bag.  
Pallet: n° 60 paper bags (1080 kg).

## STORAGE

Store the product in its original containers tightly closed, away from sun, water, ice and kept at temperature between +5°C and +30°C.  
Storage time: 12 months.



Diasen srl

Zona Industriale Berbentina, 5 Sassoferrato ANCONA

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EN 998-1:2010

Specification for mortar for masonry - Part 1: Mortar for internal and external plaster

Thermal conductivity:  $\lambda=0,045$  W/mK (category T1)  
Compression resistance: 2,7 N/mm<sup>2</sup> (category CS II)  
Fire reaction: Euroclass A2-s1,d0  
Vapour permeability value:  $\mu=4$   
Capillary water absorption: 0,35 kg/m<sup>2</sup> h<sup>0.5</sup> (category W2)  
Adhesion: 0,100 N/mm<sup>2</sup> – FP: B  
Density: 360±20 kg/m<sup>3</sup>  
Durability (freeze-thaw cycle): analysis based on current regulation of the place where the mortar is used.



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

## Thermal – acoustic insulation - Plasters

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Technical Data		
Featured		Unit
<b>Yield</b>	3,7 (±10%) kg/m <sup>2</sup> per cm of thickness 1,92 (±10%) lb/ft <sup>2</sup> per inch of thickness	kg/m <sup>2</sup> lb/ft <sup>2</sup>
Aspect	Powder	-
Colour	Grey	-
Specific weight	360 ± 20	kg/m <sup>3</sup>
Granulometry	0 – 3	mm
w/c ratio	0,60 – 0,80 10-16 liter per paper bag (18 kg)	l/kg
Mixture consistency	It can be sprayed	-
Application temperature	+5 /+30	°C
Working time (UNI EN 1015-9 – method B)	40	min
Drying time (T=20°C; R.H. 40%)	15	days
Storage	12 months in original container and in dry places	months
Packaging	18 kg paper bag	kg

LEED® Credits		
Standard GBC HOME		
Thematic area	Credit	Point
Energy & Atmosphere	EAp1 - Minimum energy performance	compulsory
	EAp2 - Minimum performance of the wall	compulsory
	EAc1 - Optimize Energy Performance	from 1 to 27
	EAc2 - Enhanced performance of the wall	2
Materials & Resources	MRp2 - Construction Waste Management	compulsory
	MRc2- Construction Waste Management	from 1 to 2
	MRc3 – Low emission materials	from 1 to 3
	MRc4 – Recycled Content	from 1 to 2
	MRc5 – Materials extracted, processed and produced in short distance (regional materials)	from 1 to 2
	MRc6 – Materials derived from renewable sources	2
Indoor Environmental Quality	Qlc3 – Humidity control	1
	Qlc11 – Acoustic	2

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LEED® Credits		
Standard 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	compulsory
	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	IEQp3 - Minimal Acoustical Performance*	compulsory
	IEQc3.2 - Construction Indoor Air Quality Management Plan—Before Occupancy	1
	IEQc4.2 - Low Emitting Materials - Paints and Coatings	1
	IEQc9 – Enhanced Acoustical Performance*	1
	IEQc11 - Mold Prevention*	1
Standard LEED Italy for New Construction & Major Renovation, v. 2009		
Thematic area	Credit	Point
Energy & Atmosphere	EAp2 - Minimum energy performance	compulsory
	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 – Materials extracted, processed and produced in short distance (regional materials)	from 1 to 2
	MRc6 – Rapidly renewable materials	1
Indoor Environmental Quality	Qlc3.2 - Construction Indoor Air Quality Management Plan—Before Occupancy	1
	Qlc4.2 - Low Emitting Materials - Paints and Coatings	1

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Final performances		Unit	Regulation	Result
Resistance to water steam diffusion ( $\mu$ )	4	-	UNI EN ISO 12572	highly breathable
Thermal conductivity( $\lambda$ )	0,045	W/mK	UNI EN 12667	-
Thermal resistance (R) for 1 cm of thickness	0,222	m <sup>2</sup> K/W	UNI 10355	-
Thermal resistance (R) for 1 inch of thickness	3,205	ft <sup>2</sup> °F h/BTU	-	-
Thermal diffusivity (a)	0,13	m <sup>2</sup> /Ms	UNI TS 11300-1	-
Specific heat (c)	1000	J/kgK	UNI EN 1745 UNI EN 10456	-
	0,239	kcal/kg °C	-	-
Sound absorption between 600 and 1500 [Hz]	$\alpha > 70\%$	-	ISO 354	-
Water absorption by capillarity	0,35	kg/m <sup>2</sup> h <sup>0,5</sup> in 30 min	UNI EN 1015 - 18	category W2
Height of water penetration	40 mm after 90 minutes	mm	UNI EN 1015 - 18	-
Dried mortar porosity	71.64% (17.83% macroporosity and 54.94% microporosity)	-	-	-
Resistance to compression	2,7	N/mm <sup>2</sup>	UNI EN 1015-11	category CS II
Resistance to bending	1,5	N/mm <sup>2</sup>	UNI EN 1015-11	-
Adhesion onto the support (brick)	0.1-type B break (mortar break)	N/mm <sup>2</sup>	UNI EN 1015-12	-
Secant modulus	742	N/mm <sup>2</sup>	UNI 6556	highly elastic
Fire resistance (Euroclass)	A2 – s1, d0	-	EN ISO 1716 EN 13823 EN 13501-1	-

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

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## PREPARATION OF SUPPORT

- Substrate must be completely hardened, dry and resistant.
- The surface must be thoroughly clean, well consolidated, without debris or detaching parts.
- In presence of an existing plaster non painted, take care that this is solid and completely attached to the substrate.
- Do not apply Diathonite Evolution over painted surfaces. Completely remove the existing finishing.
- If the plaster is detaching, even if only partially, completely remove it with a chisel. Clean the surface with a high pressure water jet cleaner (externally) or brush it.
- Check the substrate. Repair and fix damaged or non well anchored bricks, stones or blocks.
- If applied on smooth surfaces (concrete pillars, existing plaster, wood, metal) it is necessary to apply first the adhesion primer *Aquabond* (see technical data sheet).
- The support temperature must be between +5°C and +30°C.

## MIXING

- If the product is mixed with a concrete mixer, add 10-16 l of water per bag of *Diathonite Evolution* (18 kg). Mix the product for 1-2 minutes. **Do not mix the material more than 3-4 minutes.**
- If mixed with drill mixer, add 15-16 l of water each bag of *Diathonite Evolution* (18 kg). Mix until water is absorbed (2-3 minutes).
- The mixture must be foamy.
- The amount of water indicated on the packaging is merely indicative. It is possible to obtain more or less fluid mixture depending on the application.
- Never add antifrost products, cement or aggregates.

## APPLICATION

### Application by hand

1. Abundantly wet the surface. This step is **fundamental** during summer season and if walls are exposed to sun. With high temperature it is **fundamental** to wet the plaster even after 2/3 from the application.
2. Apply a first coat of *Diathonite Evolution* by trowel of about 1,5-2,0 cm of thickness and let dry (about 24 hours).

3. Over the applied coat, prepare the area creating the reference bands to obtain the required thicknesses. Points and reference bands must be created with the same product or it is possible to use steel or wood edging. In this case, these must be removed as soon after the application of the last coat. Empty spaces must be filled with *Diathonite Evolution*.
4. Corner sections can be placed together with reference bands, anyway before the application of the last layer.
5. Apply successive layers up to the required thickness. Each layer must be at max 2,5 cm. Successive layers must be applied when the one below is dry (after about 24 hours). Wet the plaster before the application of each layer. For thickness higher than 3 cm it is advisable to apply more than 2 coats of products.
6. Beyond 6,0 cm of thickness it is advisable to use a plaster mesh (such as *Polites 140*). The net must be drawed into the plaster at about half of the total thickness.
7. Prop and smooth as for a normal plaster.

### Application by pump

*Diathonite Evolution* can be applied using plastering machine for pre-mixed products.

Use plaster machine such as Pft G4 equipped with the following accessories: closed paddle mixer, stator/rotor D6, material hose 25x37 mm length ml. 10/20, spray lance.

1. Abundantly wet the surface. This step is **fundamental** during summer season and if walls are exposed to sun.
2. Load the contents of the bags inside the hopper and adjust the flowmeter (500/600 l/h).
3. Apply *Diathonite Evolution* with a thickness not higher than 1,5-2,0 cm and let dry. Successive layers must be applied when the previous one is already hardened (after about 24 hours).
4. Wet the plaster before the application of each layer. For thickness higher than 3 cm it is advisable to apply the product in more than 2 coats.
5. Beyond 6,0 cm of thickness it is advisable to use a plaster mesh (such as *Polites 140*). The net must be drawed into the plaster at about half of the total thickness.
6. Place corner sections before the application of the last layer.
7. Prop and smooth as for a normal plaster.

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## DRYING TIME

At 20°C and with relative humidity level of 40%, the product dries completely in 15 days.

- Drying time is influenced by humidity level and temperature and may significantly change.
- Protect *Diathonite Evolution* plaster from ice, direct sun light and wind.
- With high temperature, direct sunlight or strong wind it is necessary to wet the plaster 2/3 times per day for the next 2/3 after the application.
- At temperature higher than 28°C, 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 externally the *Argacem HP* render and the coloured finishing *Plasterpaint Coloured* or *Argacem Coloured*; internally it is possible to use the *Argacem Neutral* and a breathable hydro paint.

## SUGGESTIONS

- Do not apply at temperature lower than +5°C and higher than +30°C.
- During summer season, apply the product during the cooler hours of the day, away from sun.
- Do not apply with imminent threat of rainwater or ice, in condition of strong fog or with relative humidity level 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, particularly with low thick wall, it is necessary that the surface does not absorb water.

In case apply *Diasen* finishes (*Plasterpaint Coloured*, *Argacem Coloured* or *Acrilid Protect Coating*) or, if in presence of exposed walls, apply a siloxane, transparent, breathing and water-repellent product such as *Diasen BKK*.

## CLEANING

Wash tools with water before product hardening.

## SAFETY

For the handling, see product safety data sheet. While handling always use protective gloves and antidust mask.

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