Eco-friendly, sound absorbing, breathable cork-based plaster

Premixed plaster for noise reduction (NR) and the realization of wall and ceiling sound-absorbing coatings. *Diathonite Acoustix* is environmentally friendly, formulated with natural raw materials such as cork (0-3 mm / 0-0.12 in grain size), clay, diatomaceous powders and hydraulic binder. Moreover, it is recyclable as an inert at the end-of-life cycle. Thanks to its excellent sound-absorbing ability, *Diathonite Acoustix* eliminates reverberation and reduces reflected echoes. The plaster has a high breathability, good thermal insulation, dehumidifying capacity and excellent reaction to fire. The porosity that characterizes the structure and the presence of natural hydraulic lime make the plaster also bacteriostatic and anti-mould.

BENEFITS

- · Excellent sound absorbing properties:
 - NRC 0.60
 - $\alpha_w = 0.65$
- High breathability, thus avoiding mould formation and condensation.
- Excellent compression resistance
- · Reaction to fire: class A1.
- Quick application (plastering machine).
- Product with double CE certification (EN 998-1, EN 998-2).
- It can be applied on top of old plasters.
- Easily applicable on curved surfaces and complex geometries.
- Product obtained LEED credits.

YIELD

 $4.70 \text{ kg/m}^2 (\pm 10\%)$ per cm of thickness. $2.45 \text{ lb/ft}^2 (\pm 10\%)$ per inch of thickness.

COLOUR

Light grey.

PACKAGING

20 kg (44 lb) paper bag. Pallet: n° 60 paper bags (1200 kg – 2646 lb).

APPLICATION FIELDS

Premixed plaster for indoors and outdoors applications, it is suitable for the realization of sound-absorbing coatings on walls and ceilings of

cinemas, auditoriums, conference rooms, places of worship, sports facilities and in general all the wide environments in which it is necessary to reduce noise.

The product is also ideal for the noise reduction of facades and partition walls. *Diathonite Acoustix* is a natural compound and is suitable where environmentally friendly materials are required.

STORAGE

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

Storage time: 12 months.

PREPARATION OF THE SUPPORT

The support must be completely hardened and solid. The surface must be thoroughly cleaned, dry, well-bonded, without crumbly and inconsistent parts, perfectly levelled, and free of dust and dirt.

Brick

No need of primer, the application can be carried out directly on the support.





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Concrete

In case of distressed and crumbly concrete, restoration with suitable cement mortar should be planned. For the treatment of reinforcing steel bars apply suitable anti-corrosion products.

Smooth: apply the *Aquabond* primer (see technical data sheet).

Rough: primer is not needed, apply the plaster directly to the substrate.

Cellular Concrete

Diathonite Acoustix 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 is salt efflorescence, apply *Diathonite Regularization* (see technical data sheet). To uniform the substrate, use a lime-based mortar to keep breathability.

Old plaster

Ensure that the plaster is consistent and well attached to the support, otherwise provide for partial or total removal. Whenever salts efflorescence is present, remove the damaged plaster and apply the *Diathonite Regularization* (see technical data sheet). With painted plasters, given the wide variety of paints on the market, it is recommended to make an adhesion test to verify the suitability for the application or the need to use the primer *Aquabond*. On smooth plasters apply the *Aquabond* primer or, if necessary, perform a staking of the support. On rough plasters proceed with the direct application of *Diathonite Acoustix*.

Panels

Diathonite Acoustix can be applied on untreated cork panels without using a primer. Due to the wide variety of panels available on the market, it is recommended to carry out an adhesion test to verify the suitability for the direct application of *Diathonite Acoustix* or the need to first use the *Aquabond* primer. To ensure best results, make sure that the panels are installed tightly.

Wood

On non-treated wooden supports, proceed with the direct application of *Diathonite Acoustix* plaster. With smooth or treated wood, first proceed with priming the surface with *Aquabond*.

MIXING

Depending on the degree of water absorption of the support, and also taking into account the environmental conditions, it is recommended to dose the right amount of water needed for achieving the correct adhesion. Therefore, the amount of water specified is indicative.

- If mixed with a concrete mixer or a mixing drill, add 12 - 14 L of clean water for each bag of Diathonite Acoustix (20 kg). Do not mix more than 3-4 minutes.
- 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.
- The blend must present a foamy consistency.
- Do not add external compounds to the mixture.

APPLICATION

Application by hand

- It is essential to wet the support, especially in summer and in case of walls directly exposed to the sun. In case the surfaces were primed beforehand, it is not necessary to wet the support.
- **2.** With a masonry trowel apply a layer of *Diathonite Acoustix*, making sure to create a thickness of about 1,5 cm (0.59 inches).
- Create reference points or bands to achieve the required thicknesses. Points or bands can be made with *Diathonite Acoustix*



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- plaster or with aluminium or wood profiles. In the latter case, bands must be removed immediately after the application of the last layer.
- **4.** Corner sections can be placed together with reference bands, in any case always before the application of the last coat.
- **5.** To secure corners and edges provide for the use of aluminium corner guards. These aluminium guards must be fixed with *Diathonite Acoustix* to avoid thermal bridges.
- **6.** Wet the plaster before applying each layer.
- 7. When the underlying coat is consistent to the touch and visually lighter (after about 12/24 hours) proceed with the application of one or more layers of *Diathonite Acoustix* until the specified thickness is reached. In any case make sure to maintain for each applied coat a thickness ≤ 2,5 cm (0.98 inches).
- 8. At 60 mm thickness or more, a mesh such as *Polites 140* (see technical data sheet) must be included in the middle of the total thickness. *Polites 140* must be used independently of the thickness for applications on panels, wood, plasterboard or on supports subject to movement.
- 9. While smoothing the plaster, do not compress Diathonite Acoustix to preserve the porosity of the product. Use an H-shape or a knife to obtain a smooth surface, with fluid horizontal and vertical movements.

Application by plastering machine

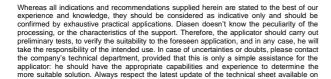
Diathonite Acoustix can be applied with plastering machines for lightened premixed products. The setting can change depending on the machine chosen. It is possible to use three-phase plastering machines (similar to PFT G4) equipped with a rotor stator D6-3, a semi-closed mixing shaft, and a conical spraying gun with a diameter of 35/25 mm, a nozzle of 14 or 16 mm.

- It is essential to wet the support, especially in summer and in case of walls directly exposed to the sun. In case the surfaces were primed beforehand, it is not necessary to wet the support.
- 2. Load the contents of the bags inside the

- hopper and adjust the flow meter of the machine. Regulate water pressure through the flow meter, starting from a high dosage and decreasing the water flow until the consistency is suitable for the perfect grip of the material.
- **3.** Spray the product downside up, thus applying a first coat of *Diathonite Acoustix* as a rough coat with maximum thickness of about 1,5 cm (0.59 inches).
- **4.** Spray *Diathonite Acoustix* with few interruptions. If the interruptions require long waiting times, soak the nozzle in clean water to prevent the formation of a material cap in the gun.
- **5.** Wet the plaster before applying each layer.
- 6. If the desired thickness can't be reached with the first coat, when the underlying layer is consistent to the touch and visually lighter (after about 12/24 hours) proceed with the application of one or more layers of *Diathonite Acoustix* until the specified thickness is reached. Following layer are to be applied with thickness never exceeding 2,5 cm (0.98 in).
- 7. On top of the first layer, create reference points or bands to obtain the required thicknesses. Points or bands can be made with *Diathonite Acoustix* plaster or with aluminium or wood profiles. In the latter case, bands must be removed immediately after the application of the last layer.
- **8.** Corner sections can be placed together with reference bands, in any case always before the application of the last coat.
- **9.** To secure corners and edges provide for the use of aluminium corner guards. These aluminium guards must be fixed with *Diathonite Acoustix* to avoid thermal bridges.
- **10.** At 60 mm thickness or more, a mesh such as *Polites 140* (see technical data sheet) must be included in the middle of the total thickness. *Polites 140* must be used independently of the thickness for applications on panels, wood, plasterboard or on supports subject to movement.
- **11.** Alongside beams and pillars, the mesh shall lean on both sides of the concrete element by at least 15 cm (5.9 inches).

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12. While smoothing the plaster, do not compress *Diathonite Acoustix* to preserve the porosity of the product. Use an H-shape or a knife to obtain a smooth surface, with fluid horizontal and vertical movements.

DRYING TIME

At a temperature of 23 ° C and relative humidity of 50% the product dries in 10-15 days.

- Drying times are affected by relative humidity and temperature of the environment, and can also vary significantly.
- If Diathonite Acoustix is applied in high thicknesses, the drying time is considerably longer.
- Protect Diathonite Acoustix from frost, direct insolation and wind while it is still curing.
- 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.
- As soon as Diathonite Acoustix has dried, it is recommended to coat the plaster using the chosen finishing system.
- If applied outdoors, in order to avoid prolonged exposure to harsh weather conditions, it is essential to proceed as follows: after applying the last layer of Diathonite Acoustix and waiting for its complete curing (not earlier than 10-15 days), it is recommended to cover the plaster with the chosen smoother. When the latter is fully cured (not earlier than 7 days), apply the finish.

In acoustic insulation interventions, for smoothing the plaster it is possible to use one of the Diasen mortars (see technical data sheets). When used outdoors, the mortars should be protected with Diasen finishes or other water-repellent and breathable finishes. In indoor environments it is recommended to use decorative coatings or Diasen finishes or other breathable finishes. The

application of mortars or coatings can decrease the sound-absorbing ability of the plaster depending on the thickness and the covering ability of the coating used.

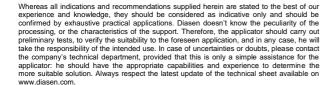
SUGGESTIONS

- Do not apply at environmental temperature or at support temperature lower than +5°C (34°F) and higher than +30°C (86°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%.
- Diathonite Acoustix can be used with plastering machines for ceiling applications. Hand application is not recommended.
- If applied indoors, it is **essential** that the external surface does not absorb water. Otherwise, treat the surface with *BKK Eco*.
- In case of exposed walls, apply a waterrepellent and breathable transparent siloxane product, such as BKK Eco.
- Before applying the product, it is recommended to cover door and windows thresholds, frame and any element that does not need to be coated.
- It is recommended to waterproof and protect all those points most subject to hygrometric stresses, such as at the base of the wall near the ground- or in the grafts between the flat roof slab and the external walls.
- 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* Acoustix and the support

FINISHES

In acoustic insulation interventions it is possible to use both indoor and outdoor mortar, such as:

Argatherm, with particle size 0-0,6 mm (0-0.023 in), if a thermal mortar with fine texture





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- is required.
- Argacem Coloured, with particle size 0-0,6 mm (0-0.023 in), to obtain smooth and coloured surfaces.
- Argatherm Ultrafine, with particle size 0 0,1 mm (0.004 in), to obtain perfectly smooth surfaces.

Argatherm and Argacem Ultrafine mortars can be painted with Diasen finishes such as Plasterpaint Colorato, Acrilid Protect Coating, Limepaint, Decork Design, Decork Alfareflex, Decork Façade, BKK Eco, Decorkrete or other water-repellent and breathable finishes.

In acoustic absorption interventions, it is important that the surface maintains a rough and porous appearance. *Diathonite Acoustix* can be painted directly applying the breathable lime-based paint called *Limepaint* (see technical data sheet). If it is a finer appearance required, *Diathonite Acoustix* can be finished off with the following

smoothing compound, which has both thermal and sound-absorbing properties:

Argatherm Acoustix, with a fine grain size texture 0-0,6 mm (0-0.023 in), which contributes to thermal insulation (λ = 0,128 W/mK) and guarantees an NRC of 0,50 (value referred to the application of 3 cm / 1.18 in of Diathonite Acoustix + Argatherm Acoustix).

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.

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

Technical Data [*]				
Features		Unit		
Wald	4.70 (±10%) for each cm of thickness	kg/m²		
Yield	2.45 (±10%) per inch of thickness	lb/ft ²		
Aspect	powder	-		
Colour	light grey	-		
Density	470 ± 30	kg/m³		
	29.34 ± 1.87	lb/ft ³		
One in a in a	0 – 3	mm		
Grain size	0 – 0.12	in		
Water to add to the mixture	0.60 – 0.75 L/kg 11 - 14 L for each 18 kg bag	L/kg		
	0.072 - 0.090 U.S. gallon per paper bag (44.09 lb)	gal U.S / lb		
Minimum thickness for application	1.5 / 0.6	cm / inches		
Maximum thickness for each layer	3.0 / 1.18	cm / inches		
Application temporature	+5 / +30	°C		
Application temperature	+41 / +95	°F		

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Whereas all indications and recommendations supplied herein are stated to the best of our experience and knowledge, they should be considered as indicative only and should be confirmed by exhaustive practical applications. Diasen doesn't know the peculiarity of the processing, or the characteristics of the support. Therefore, the applicator should carry out preliminary tests, to verify the suitability to the foreseen application, and in any case, he will take the responsibility of the intended use. In case of uncertainties or doubts, please contact the company's technical department, provided that this is only a simple assistance for the applicator: he should have the appropriate capabilities and experience to determine the more suitable solution. Always respect the latest update of the technical sheet available on www.diasen.com.



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Workability time (UNI EN 1015-9 – method B)	40	minutes
Drying time (T=23°C; U.R. 50%)	10-15	days
Storage	12	months
Packaging	20 kg (44 lb) paper bag	kg

Kkk

Final performances*		Unit	Regulation	Results	
Thermal conductivity (λ_{20} , dry)	0.083	W/mK	EN 1745 ASTM C518	-	
Thermal resistance (R)	0.120	0 m ² K/W			
for 1 cm/ 0.4 in thickness	1.738	ft2 °F h/BTU	UNI 10355	-	
Manager 1 22	37.42	lb/ft ²	-	6.5. 6.1	
Vapour permeability coefficient (µ)	$\mu = 4$	-	EN 1015-19	highly breathable	
σσειποιετιτ (μ)	WVT = 14	grains/h·ft ²	ASTM E96		
Compressive strength	5.3	N/mm²	EN 998-1	category CS III	
Compressive strength	768.7	lbf/in² (psi)	EN 998-2	M 5	
Floyural strongth	1.9	N/mm ²	UNI EN 1015-11		
Flexural strength	273.6	lbf/in² (psi)	ONI EN 1015-11	-	
A - - - - - - - - -	435.11	lbf/in² (psi)	ASTM C349		
Adhesion onto the support (brick)	62656	psf	A31101 C349	-	
(Silvin)	0.258	$MPa = N/mm^2$	EN 1015-12	mortar break	
Reaction to fire	class A1	-	UNI EN 13501-1	-	
Chloride content	$0.018 \pm 0.003\%$	-	EN 1015-17	-	

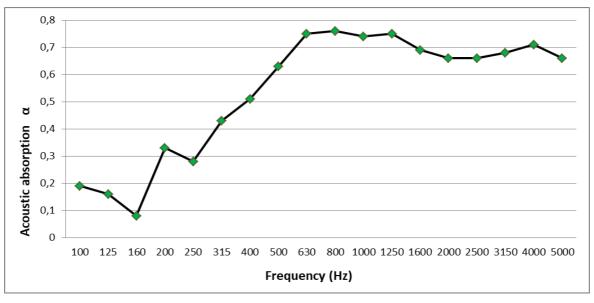
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Acoustic Performances		Unit	Regulation	Results
Noise Reduction Coefficient (NRC) thickness 3 cm / 1.18 in	0.60	-	ASTM C423	-
Sound Absorption Average (SAA) thickness 3 cm / 1.18 in	0.61	-	ASTM C423	-
α_w – single value of sound absorption thickness 3 cm / 1.18 in	0.65	-	UNI EN ISO 11654	-
Sound absorption class thickness 3 cm / 1.18 in	С	-	UNI EN ISO 11654	-
Acoustic absorption between 600 and 1500 [Hz] thickness 3 cm / 1.18 in	α > 70%	-	ISO 354	-



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Increase in the Sound Insulation Rating Index (R_w) compared to traditional plaster	3	dB	UNI EN ISO 10140-2 UNI EN ISO 717-1	-
Facade insulation (25 cm / 9.84 in brick + 3 cm / 1.18 in <i>Diathonite Acoustix</i> on the outside)	$D_{2m,nT,w} = 46$	dB	UNI EN ISO 140-5 UNI EN ISO 717-1	-
Theoretic Transmission Loss (TL) (5 cm / 1.96 in external wall made of <i>Diathonite Acoustix</i> + 25 cm/ 9.84 in of <i>thermal brick</i> + 1,5 cm / 0.59 in of <i>plaster</i>)	Rw = 59.0	dB	UNI EN ISO 140-5 UNI EN ISO 717-1	-
Theoretic Transmission Loss (TL) (2 cm / 0.78 in external wall made of <i>Diathonite Acoustix</i> + 20 cm / 7.87 in of <i>thermal brick</i> + 2 cm / 0.78 in of <i>Diathonite Acoustix</i>)	Rw = 56.0	dB	UNI EN ISO 140-5 UNI EN ISO 717-1	-
Theoretic Transmission Loss (TL) (3 cm / 1.18 in external wall made of <i>Diathonite Acoustix</i> + 12 cm / 4.72 in of <i>brick</i> + 3 cm / 1.18 in of <i>Diathonite Acoustix</i>)	Rw = 53.0	dB	UNI EN ISO 140-5 UNI EN ISO 717-1	-
Theoretic Transmission Loss (TL) (2 cm / 0.78 in external wall made of <i>Diathonite Acoustix</i> + 20 cm / 7.87 in of <i>brick</i> + 2 cm / 0.78 in of <i>Diathonite Acoustix</i>)	R _W = 52.0	dB	UNI EN ISO 140-5 UNI EN ISO 717-1	-
Transmission Loss (TL) on site (2 cm / 0.78 in partition wall made of Diathonite Acoustix + 25 cm/ 9.84 in of "Poroton" brick + 2 cm / 0.78 in of Diathonite Acoustix)	R'w ≥ 51.0	dB	UNI EN ISO 140-4 UNI EN ISO 717-1	-





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Frequency (Hz)	α_{s}	α_{p}
100	0,19	
125	0,16	0,1
160	0,08	
200	0,33	
250	0,28	0,35
315	0,43	
400	0,51	
500	0,63	0,65
630	0,75	
800	0,76	
1000	0,74	0,75
1250	0,75	
1600	0,69	
2000	0,66	0,7
2500	0,66	
3150	0,68	
4000	0,71	0,7
5000	0,66	

LEED® credits Standard LEED for New Construction & Major Renovation, LEED for Schools, LEED for Core & Shell, v. 2009			
Thematic area	Credit	Score	
Figure 1 9 Atmosphere	EAp2 - Minimum energy performance	mandatory	
Energy & Atmosphere	EAc1 – Optimize Energy Performance	from 1 to 19	
	MRc2- Construction Waste Management	from 1 to 2	
Matariala 9 Danasana	MRc4 – Recycled Content	from 1 to 2	
Materials & Resources	MRc5 – Regional Materials	from 1 to 2	
	MRc6 - Rapidly Renewable Materials	1	
	IEQc3.2 - Construction Indoor Air Quality Management Plan—Before Occupancy	1	
Indoor Environmental Quality	IEQc4.2 - Low Emitting Materials - Paints and Coatings	1	
	IEQc11 - Mold Prevention**	1	

^{**} credits valid only for LEED standard for Schools, LEED for Core & Shell, v. 2009.



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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)	ÉMISSIONS DANS L'AIR INTÉRIEUR' A+ A B C		
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		













