

# DIATHONITE ACOUSTIX

*Eco-friendly cork based plaster for  
sound absorption and acoustic insulation*



# Diathonite Acoustix

## Factsheet

### Demonstration tests

Diasen undertook the first series of tests on cork based plaster as early as 1985. The aim of our research was to obtain a unique product that would have the best thermal, dehumidifying, sound absorbent and long lasting qualities (when exposed to cold/ heat and salt) with easy application.

### Durability of Diathonite Acoustix

All the materials used to produce Diathonite Acoustix have a life-span of centuries; archaeological findings have even brought to light remains of Roman houses dating back to as far as 2000 years ago, which were insulated with cork. The diatomaceous earth and clay, which form the basis of our product, have been accumulated in deposits for thousands of years on our planet.

### Technical analysis of components

**Cork:** the decision to use cork was based on its ability to perform as a finished material, adaptable to, and therefore efficient for, new construction developments. This material is non-toxic, biologically pure, unalterable, waterproofing, breathable, resistant, thermally inert, electrically neutral and non-deformable. It has a good mechanical resistance, low combustion speed and excellent acoustic performances.

**Clay:** it is a natural porous and light material. It has a good thermal inertia and a good compression resistance, it is highly breathable and resistant to humidity.

**Natural hydraulic lime:** it is a natural hydraulic binder with high breathability; it is an excellent thermal insulation and it is resistant to thermal shocks. It has an excellent adhesion on any kind of support.

**Diatomaceous earth:** this is a naturally occurring mineral, formed through the accumulation of organic material in the ocean floor in prehistoric times. When the water receded, deposits were distributed in various parts of the earth. Due to its high level of porosity (85%) per volume, diatomaceous earth can absorb liquid of up to one and a half times its weight.

**Eco friendly additives:** obtained by vegetal source, they enable the mix to amalgamate, making it more malleable and easier to apply. They give rise to the formation of micro cells, which maintain a high level of permeability to water vapour and increase the thermal resistance of the binder.

**Fibers:** fibers are easily dispersed in the matrix constituting a homogeneous material able to counteract the plastic shrinkage and the formation of micro-cracks, consequently increasing its resistance. It gives mechanical resistance, a perfect stability over time and they do not release toxic residues.



Diathonite Acoustix section (scaling to 200%)



1. Diatomaceous earth / 2. Cork / 3. Clay / 4. Hydraulic lime

# Diathonite Acoustix



## Technical data

<b>CE</b>	<b>DIATHONITE ACOUSTIX</b>
	<b>CPD - 021/2014</b>
	<b>UNI EN 998-1</b>
	Specification for mortar for masonry. Part 1: Rendering and plastering mortar

### SOUND ABSORPTION

It absorbs 70% of impacting sound wave.



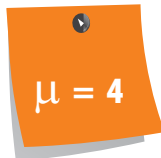
### NOISE REDUCTION COEFFICIENT

Certified value according to ASTM C423 regulation.



### BREATHABILITY

It contributes to increase the indoor housing comfort.



### THERMAL CONDUCTIVITY

It improves energy savings.



### FIRE RESISTANCE

It does not burn or emit smoke.



### MECHANICAL RESISTANCE

Excellent resistance, durability and stability over time.



## LEED® - Leadership in Energy and Environmental Design

Diathonite Acoustix is an eco-friendly product, because it is formulated with non dangerous material for the environment and safe for human health, both during application and after its complete curing. For this reason, it contributes to obtain **LEED credits** according to **Green Building Council** certification protocols.

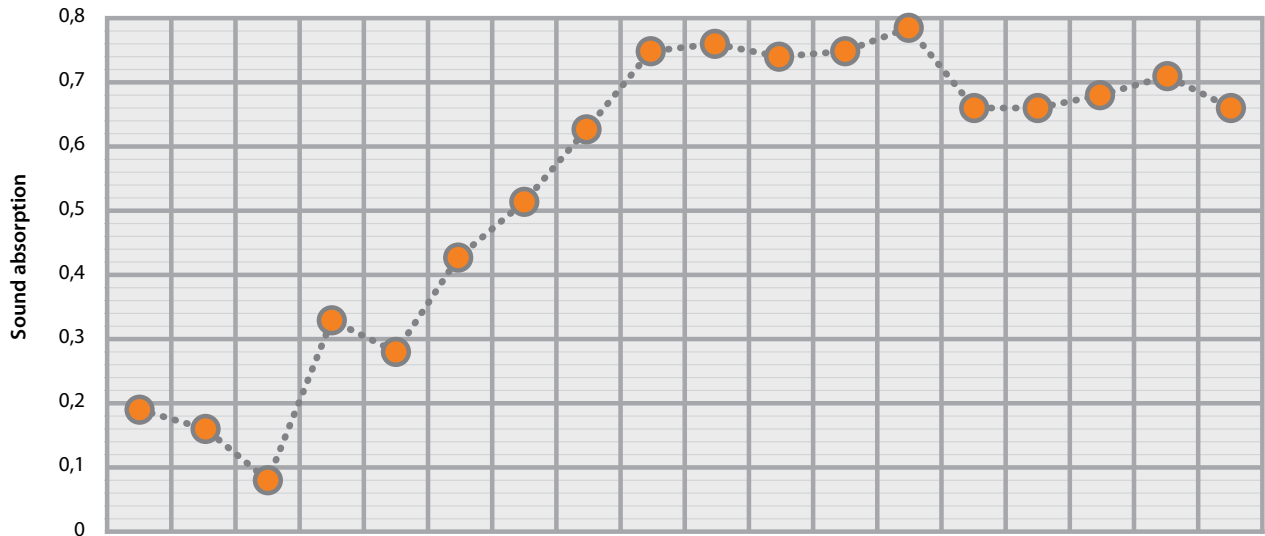


### Standard LEED for New Construction & Major Renovation, v. 2009

Thematic Area	Credit	Credits
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

# Diathonite Acoustix

## Technical Data



Frequency (Hz)	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
$\alpha_s$	0,19	0,16	0,08	0,33	0,28	0,43	0,51	0,63	0,75	0,76	0,74	0,75	0,79	0,66	0,66	0,68	0,71	0,66
$\alpha_p$	0,10			0,35			0,65			0,75			0,65			0,70		

Sound absorption technical data	Value	Regulation
Noise Reduction Coefficient (NRC)	0.60	ASTM C423
NRC - painted material	0.55	ASTM C423
Sound Absorption Average (SAA)	0.61	ASTM C423
Weighted Sound Absorption Coefficient ( $\alpha_w$ )	0.65	UNI EN ISO 11654
Sound Absorption Class	C	UNI EN ISO 11654

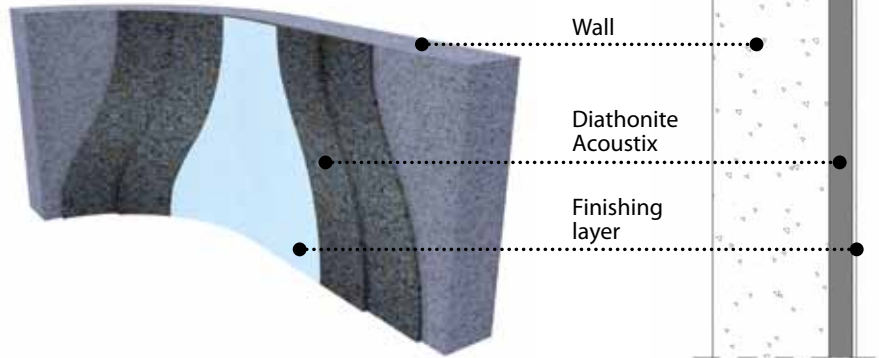
Technical Data	value	Regulation
Fire resistance	Class A1	UNI EN 13501-1
Mechanical resistance	3 N/mm <sup>2</sup>	UNI EN 1015-11
Breathability ( $\mu$ )	4	UNI EN ISO 12572
Thermal Conductivity ( $\lambda_{10dry}$ )	0,083 W/mK	UNI EN 12667



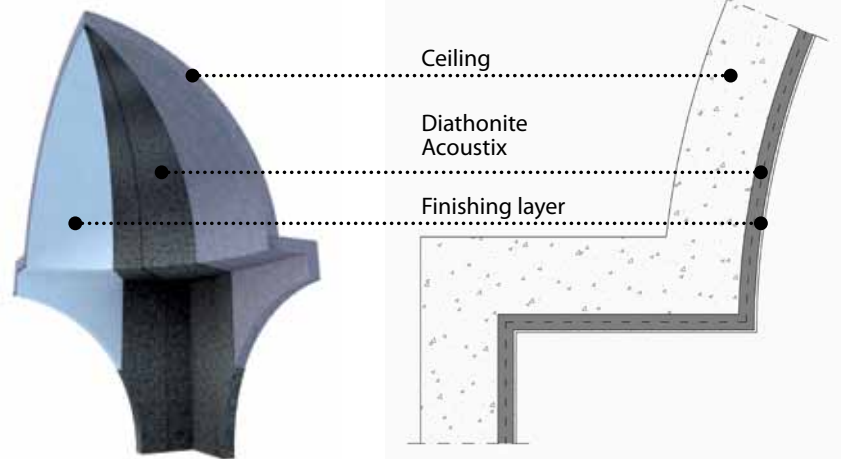
# Diathonite Acoustix

## Application fields

### Wall



### Ceiling



### How to apply

Diathonite Acoustix can be applied to walls and ceilings of any kind of shape. The application requires no specialised manpower, no grids, fixing plugs or glue. The final result is an elegant, continuous and seamless surface.



# Diathonite Acoustix

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## Ideal solution for a wide range of applications

### Commercial

- Restaurants
- Shopping centres
- Retail outlets
- Cinemas
- Music studios

### Offices

- Open spaces
- Conference rooms
- Call centres

### Culture and Education

- Museum and galleries
- Schools
- Classrooms
- Auditoriums
- Theatres
- Libraries

### Health and wellness

- SPA
- Gyms
- Swimming pools
- Hospital and medical centres
- Wellness centres

### Religion and cult

- Churches
- Monasteries
- Oratories



# Diathonite Acoustix

## Features and Key Benefits



### Fast and simple application

By plastering pump or by hand, directly to the wall/ceiling.

No plugs or fixing material needed.  
No specialised manpower needed.

### Application to any kind of shape

Ideal solution for: round, curved or complex geometries structures.

### Fireproof

Fire resistance Class A1.

It does not burn or emit smoke.

### Long-lasting

100% natural and stable material.  
High durability and resistance for a life-lasting solution.

### Eco-friendly

Made with 100% natural material.

It contributes to obtain up to 43 LEED Credits.

### Energy saving

Thanks to its thermal insulation capacities, it increases energy savings.

### Savings on application costs

Less expensive solutions compared to traditional and complex modular wall panels.

### Low thickness

Space and cubic capacity savings.

### Housing comfort

Igrosopic regulation capacities ensure the humidity control and the indoor wellness.

### Resistant to humidity

Thanks to its hygroscopic features, it is the ideal solution for any kind of wet area, such as swimming pools, SPA, gyms.

### Certified

CE marked, LEED Certified.

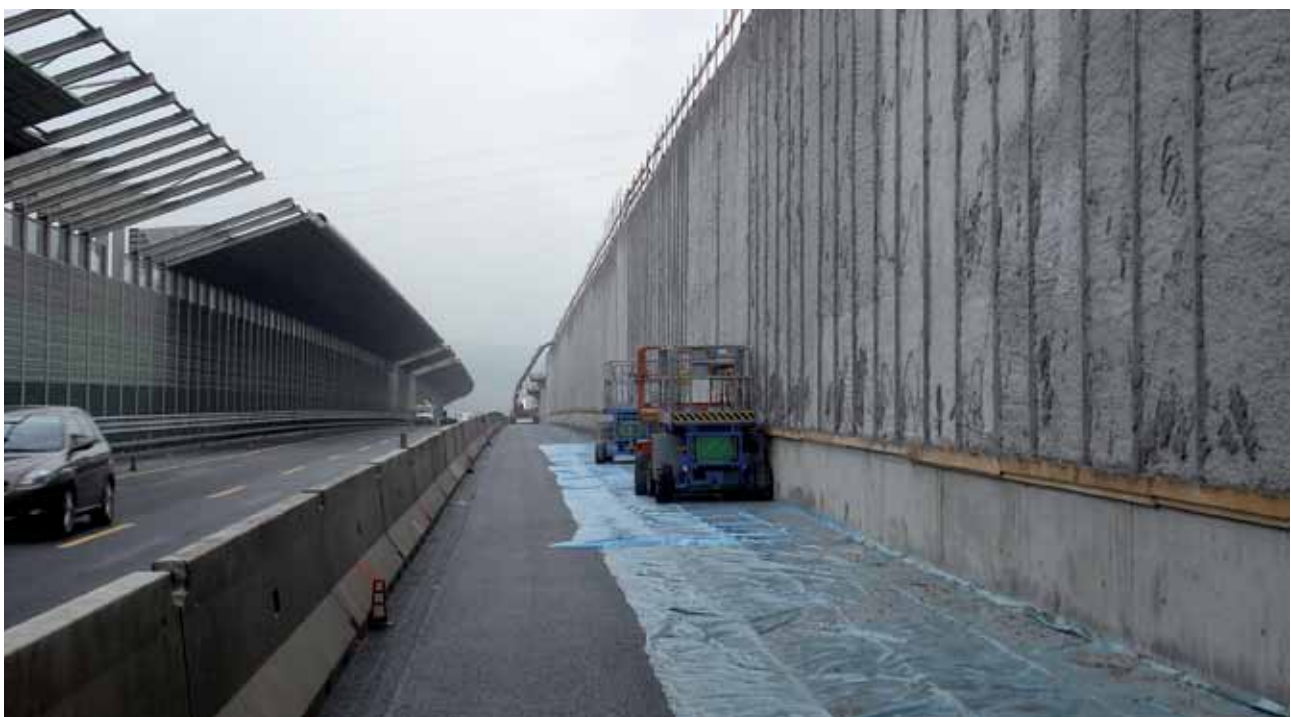


# Case study

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## A1 Motorway - Bologna, Italy

In this particular application, Diathonite Acoustix has been used to reduce the noise level of a motorway section in the proximity of a town near Bologna. The application of Diathonite Acoustix directly to the concrete walls of the tunnel present in one of the two carriageways, it has reduced of 70% the reflection of sound waves, as well as decreasing of 3.5 dB the reflected sound intensity.





# Case study

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## Luigi Bocconi University - Milan, Italy

The prestigious University "Luigi Bocconi" chose Diathonite Acoustix as sound absorbing plaster for all its classrooms, auditorium, libraries, corridors and conference rooms of the new department built in 2006 in Milan.

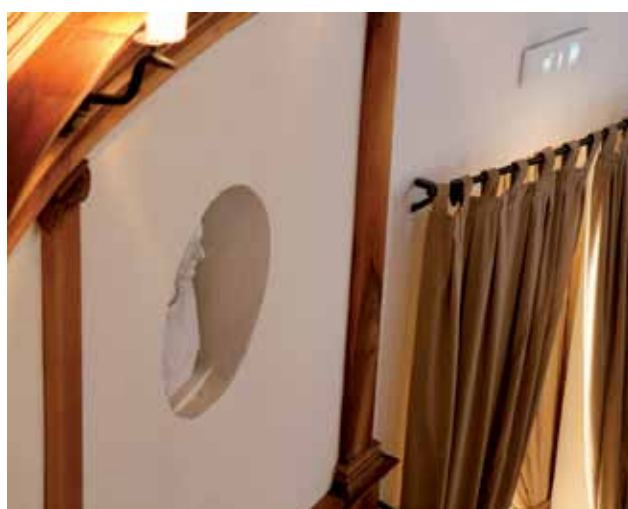


# Case study

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## "Cucinelli theater" - Solomeo - Perugia, Italy

Diathonite Acoustix has been applied inside the small but prestigious "Cucinelli Theater" of Solomeo, a town in the Umbria region, where the famous company "Brunello Cucinelli", known all over the world for the production of tailor-made, high-quality cashmere clothes, has its headquarters. The product, applied on every wall inside the theater, has allowed an effective correction of the reverberation. This has granted an excellent acoustic comfort in the whole theater, able to receive up to 200 people.



# Case study

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## "Cucina Torcicoda" Restaurant - Florence, Italy

This is the renovation of a restaurant located in the famous central Santa Croce square in Florence. Diathonite Acoustix has been applied by plastering machine on every wall and ceiling of the restaurant. This product was the perfect choice to keep the characteristics of the structure (vaulted ceilings with complex geometries), adapting perfectly to the shape of the building.





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