

DIATHONITE SCREED

*Cork based eco-friendly screed, for
thermal insulation and energy retrofit*



Diathonite Screed

What it is

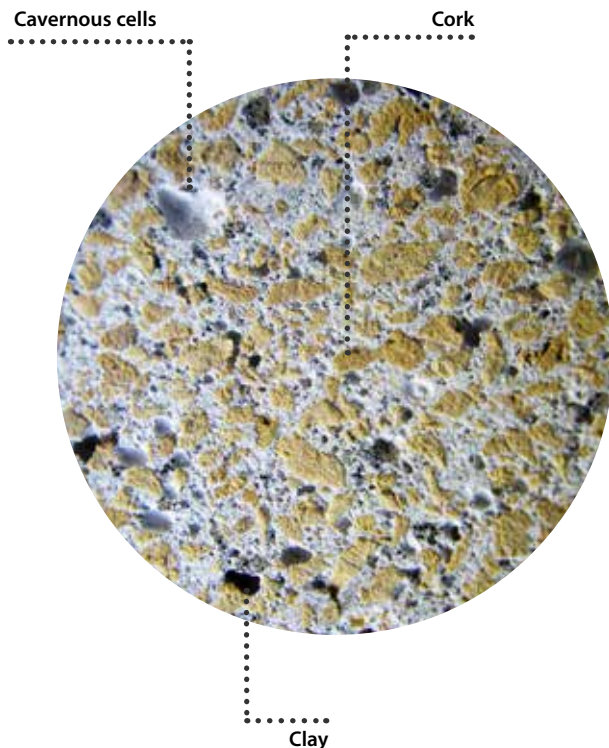
Demonstration tests

Diasen undertook the first series of tests on cork based screed 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

All the materials used to produce Diathonite 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.



Enlarged section of Diathonite

Technical-physical analysis of components

Cork: cork was chosen because of its ability to be a complete material, effective for new construction trends. It is non-toxic, biologically pure, stable, waterproof, breathable, resistant, with good insulating capacity, electrically neutral, non-deformable, it has good mechanical strength, a low rate of combustion and excellent acoustic performances.

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

Natural Hydraulic Lime NHL 3.5: is a natural hydraulic binder with high breathability; it is an excellent thermal insulator and highly resistant to thermal shocks, with excellent adhesion to substrates.

Diatomaceous earth: this is a naturally occurring mineral, formed through the accumulation of organic material (cuttlefish bones, vegetables etc.) in the ocean floor during pre-historic times. These deposits were left when the oceans receded and are found in various places around the world. Thanks to its high level of porosity (85% of the volume of diatomaceous earth) it can absorb liquids up to one and a half times its weight.

Eco-friendly additives: obtained from plants, they amalgamate the mixture, making it more workable 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, creating a homogeneous material that counteracts shrinkage and the formation of micro-cracks, consequently increasing its resistance. They give mechanical resistance, a perfect stability over time and they do not release toxic residues.



1. Diatomaceous earth / 2. Cork / 3. Clay / 4. Natural hydraulic lime

Application fields



- 1** Floor slab-on-grade
- 2** Floors of non heated rooms
- 3** Suspended slab
- 4** Terraces and balconies
- 5** Attic floor
- 6** Flat or pitched roof



Impact sound insulation

The typical example of impact transmission is the **sound of footsteps** in a room being heard in a room below. Acoustic control measures to eliminate transmission usually include the insulation of the source of the impact, applying a resilient mat between the floor and the screed, to **disconnect the bearing structure** from the floor, preventing the transmission of vibration.

Diafon is a soundproofing mat that, used in combination with **Diathonite Screed**, effectively insulates footfall noise, **creating a "floating floor"**.

CE mark of Screed

Since August 1st, 2004 a new **European Regulation** has entered into force. This regulation sets the **minimum performances** of materials used as screed.


UNI EN 13813 establishes that:

- Compression Resistance must be equal or greater that 5 N/mm^2
- Bending Resistance must be equal or greater that 1 N/mm^2
- Thermal conductivity must be declared whenever the screed is used for thermal insulation.

Another obligation is about the **labelling of each single bag**, that must state the **minimum performances** required by **UNI EN 13813**. The absence of this label means the non compliance of the **needed requirement** and thus the non conformity of the material **to be used as screed**.



Technical data

	DIATHONITE SCREED
	0068 – CPR – 021/2014
	UNI EN 13813
	Screed material and floor screeds - Screed material - Properties and requirements.

THERMAL CONDUCTIVITY

$\lambda = 0,060$
W/mK

IMPACT SOUND INSULATION OF FLOORS

L'_{nw}
58 dB *

COMPRESSION RESISTANCE

> 5
N/mm²

BENDING RESISTANCE

> 1
N/mm²

REACTION TO FIRE

Euroclass A1

DRY MORTAR POROSITY

63,48%

*Diafon mat + 5 cm Diathonite Screed (on site measurement)



LEED® - Leadership in Energy and Environmental Design

Diathonite Screed 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, LEED for Schools, LEED for re & Shell, v. 2009

Thematic area	Credit	Points
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	IEQc3.2 - Construction Indoor Air Quality Management Plan - Before Occupancy	1
	IEQc4.1 - Low Emitting Materials - Concrete adhesives, primer, sealants, and products for wood	1

Features and benefits



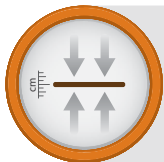
ENERGY SAVING

Excellent insulation against cold and heat.
It avoids thermal loss and overheating of rooms.



MECHANICAL STRENGTH

High compression resistance. It can be used both indoor and outdoor, it does not crack or fissures.



LOW THICKNESS

Diathonite Screed can be applied with a minimum thickness of 4 cm.
Ideal for refurbishment, with restricted thickness requirements.



LIGHTWEIGHT

Diathonite is a lightweight screed thus it does not weigh down the existing structure.
Ideal application onto existing floors.



ACOUSTIC PROPERTIES

Thanks to cork and its porous structure, Diathonite screed contributes to acoustic insulation when used together with Diafon acoustic insulation mat.



ECO-COMPATIBLE PRODUCT

Diathonite Screed is an eco-friendly product, and its use contributes to get LEED credits.



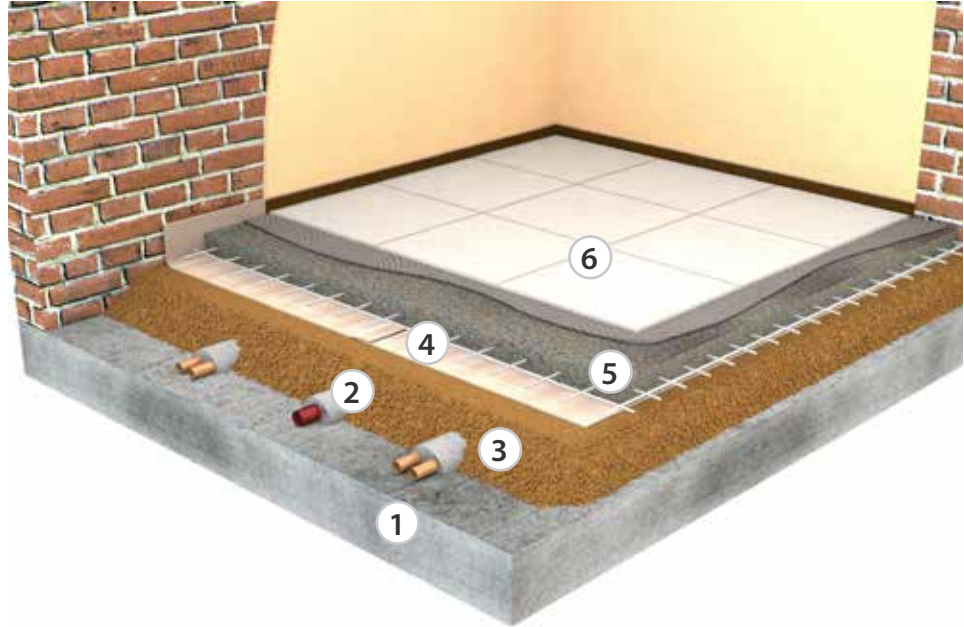
PROTECTION FROM FIRE

Diathonite Screed does not burn and does not emit smoke.
Fire reaction Euroclass A1.

Multi-layer substrate

High thickness screed with granulated cork

- 1 Floor
- 2 Pipework covering
- 3 Grancork
- 4 Diafon
- 5 Diathonite Screed
- 6 Paving material



GRANCORK		
Thickness cm	Weight kg/m ²	Thermal Resistance m ² K/W
1	1.2	0.2000
2	2.4	0.4000
3	3.6	0.6000
4	4.8	0.8000
5	6	1.0000
6	7.2	1.2000
7	8.4	1.4000
8	9.6	1.6000
9	10.8	1.8000
10	12	2.0000

DIATHONITE SCREED		
Thickness cm	Weight kg/m ²	Thermal Resistance m ² K/W
4	32	0.6667
5	40	0.8335
6	48	1.0002
7	56	1.1669
8	64	1.3336
9	72	1.5003
10	80	1.6670



GRANCORK - Pure granulated cork

Grancork is pure granulated blond cork, with a grain size of 3-5 mm, to use for substrate where to apply Diathonite thermal screed, even at high thickness. It can be used in combination with Grancork Binder, a natural mineral binder that gives Grancork resistance and strength.

Thermal Conductivity

$$\lambda = 0,050 \text{ W/mK}$$

Density

$$120 \pm 30 \text{ kg/m}^3$$

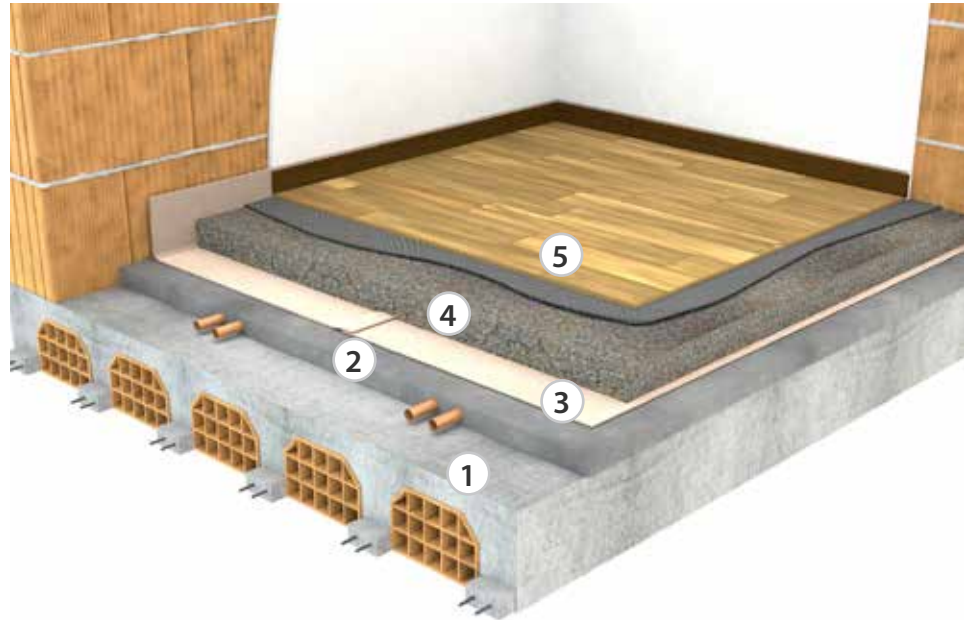
Specific heat

$$1670 \text{ J/kgK}$$

Multi-layer substrate

Insulation screed on top of underfloor pipework screed

- 1** Floor
- 2** Underfloor pipework screed
- 3** Diafon
- 4** Diathonite Screed
- 5** Paving material



Stratigraphy

Section	Material	Thickness cm	Thermal resistance m ² K/W
1	Concrete and masonry floor	30	0,4100
2	Underfloor pipework screed	5	0,0556
3	Diafon	0,38	0.1288
4	Diathonite Screed	5	0.8333
5	Paving material	1	0.0100

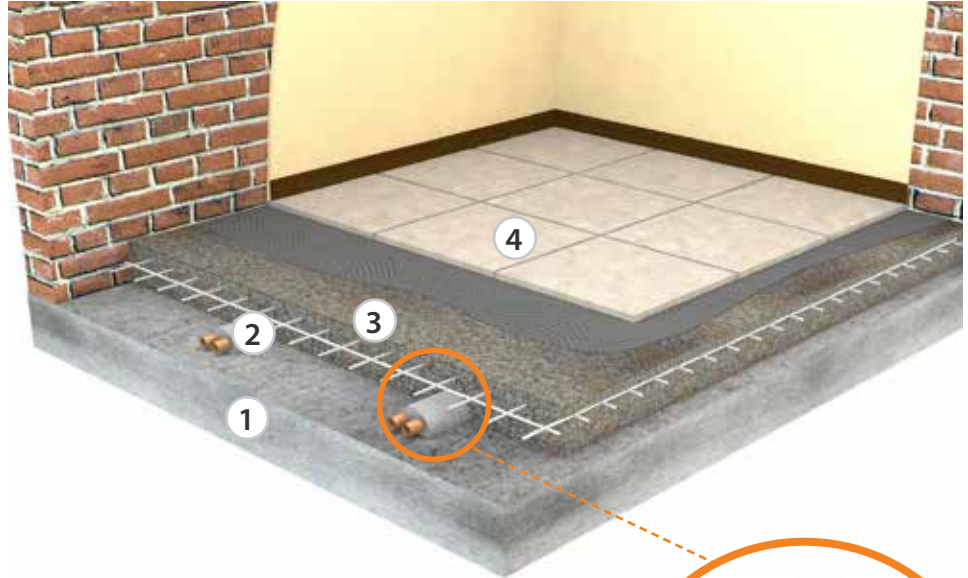
Thermal Insulation	U = 0.590 W/m ² K
Impact sound insulation	L'nw = 58 dB on site
Lightness	40 kg/m²



One layer substrate

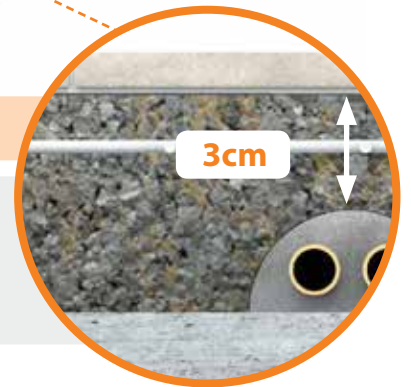
Thermal screed and pipework

- 1 Floor
- 2 Pipework covering
- 3 Diathonite Screed
- 4 Paving material

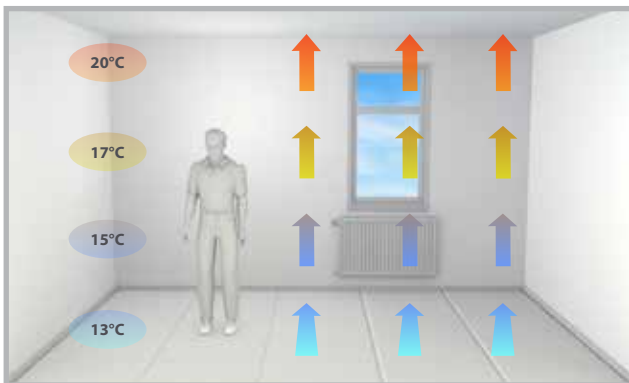


Minimum thickness, maximum insulation!

If Diathonite Screed is applied with pipeworks **embedded in the screed**, it should be a **minimum of 30 mm** above the elements. To improve screed resistance place a galvanized steel reinforcement mesh.



Traditional Screed



A room with a traditional screed, even if properly heated, will have **different temperature** between the **upper and the lower part**, with a cold floor and a **thermal gap**.

Diathonite Screed



A room with **Diathonite Screed** will have a **constant temperature** even when heating is turned off. The temperature uniformity creates a feeling of **thermal comfort** inside the room.

One layer substrate

Insulating screed onto ground floor or existing floor

- 1 Floor / Existing floor
- 2 Watstop
- 3 Diathonite Screed
- 4 Paving material



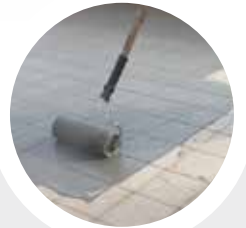
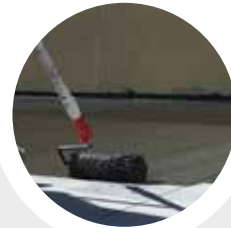
Watstop

Watstop is a special 3 component epoxy cement waterproofing, that creates an effective barrier against rising damp, avoiding any humidity related issues. Watstop can be applied by roll, brush or trowel directly onto the substrate where to intervene.

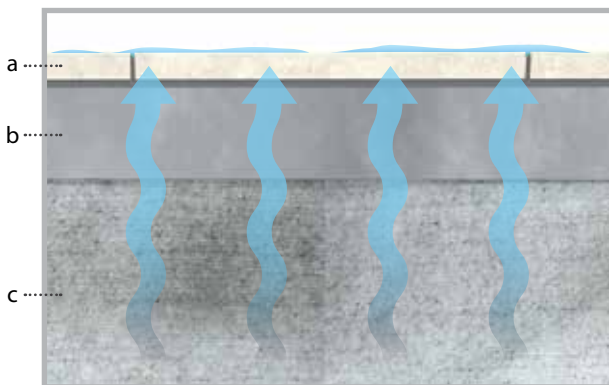
Application onto:

Concrete

Tile



Traditional screed



a. Floor / b. Traditional screed / c. Paving material

Watstop + Diathonite Screed



a. Floor / b. Watstop / c. Diathonite Screed / d. Paving material

A non adequately protected ground floor slab can have problems due to rising damp, with consequent humidity stain, thermal loss, cold floor and superficial condensation of the floor.

Watstop is able to stop rising damp, protecting the insulation layer made with Diathonite Screed. A protected floor will not have superficial condensation and thermal loss.

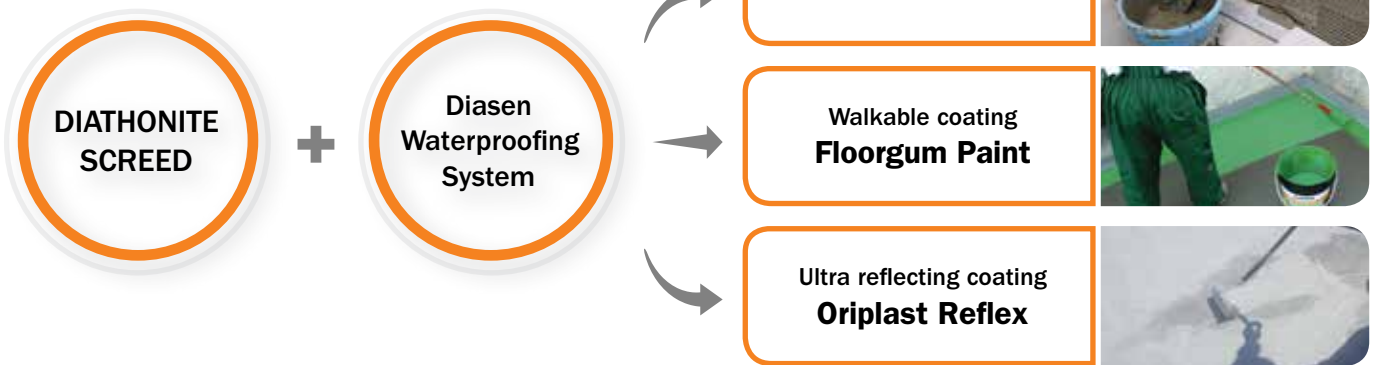
External application

Insulating screed for balconies, terraces or flat roofs

- 1 Floor
- 2 Diathonite Screed
- 3 Diasen waterproofing system
- 4 Paving material / Diasen coating



The System



Application

1. Mixing



Mix the product in a concrete mixer after added the right water amount as stated in the technical data sheet.

2. Creation of reference bands



Use Diathonite Screed to create reference bands for the total thickness.

3. Application of screed



Apply Diathonite Screed directly onto the substrate.

4. Smoothing



Use a traditional straightedge to smooth the screed, using the previously made bands as reference.

5. Finishing



Finish the surface with a plasterer's trowel before the application of the paving material.

6. Application of tile



Apply the paving material or the waterproofing system once the screed is completely dry.

Reinforcement mesh. When is it needed?

Diathonite Screed is a fiber reinforced product. However sometimes we recommend the use of a thermo welded galvanized metal or polipropilene mesh, 2 mm thick and mesh 5x5 cm.

The mesh must be used when the screed is applied:

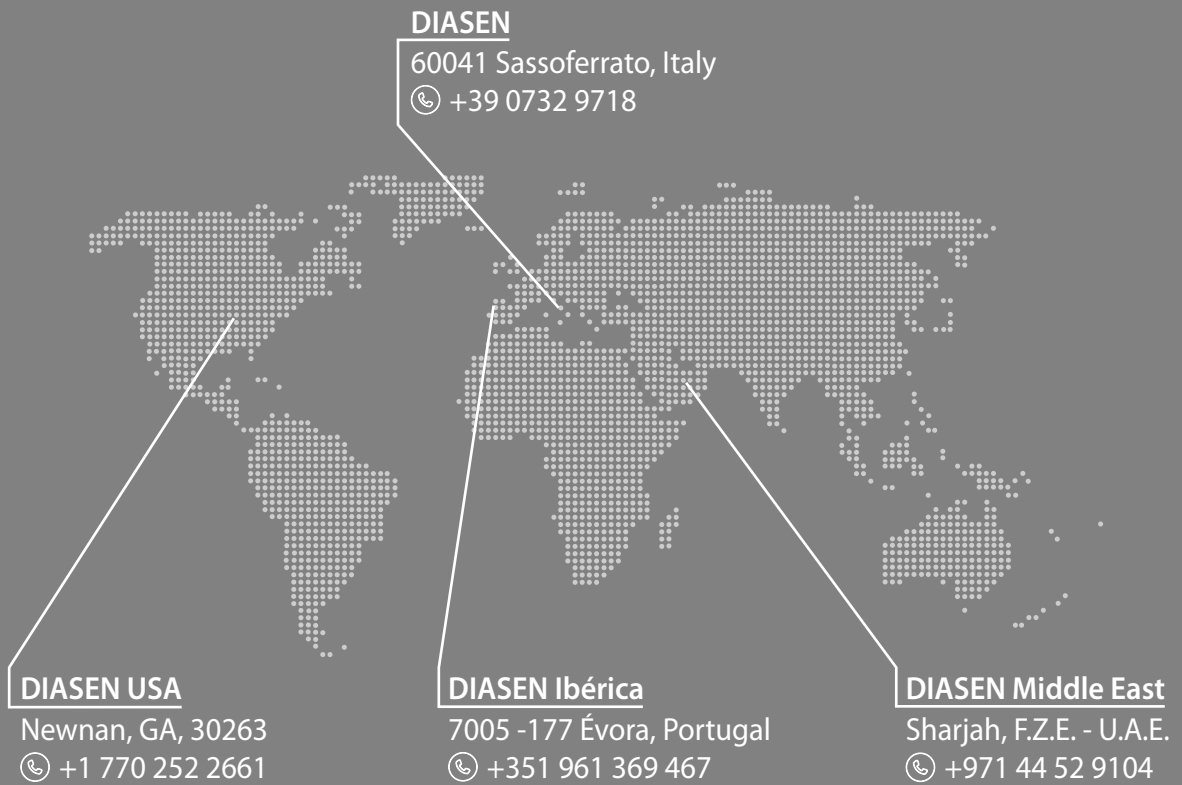
- to allocate pipework;
- onto wood, steel or insulation panels;
- onto Grancork granulate.

Adhesion primer?

If applied onto wood or steel it is necessary to apply Aquabond primer to improve bonding.

If applied onto ground floor slab or in case of rising damp it is necessary to apply Watsop.





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