Clayworks

CLAY HEATING PANELS

THERMAL HEATING SYSTEM

Natural Clay Plasters

OVERVIEW

Clayworks Clay Heating Panels are vapour diffusion, open clay plaster dry-lining panels with a built-in heating system. The system has a sandwich construction – clay and wood fibre – while the heating system is designed for both in-ceiling and in-wall heating.

The panels are finished with clay plaster, and they warm up to radiate heat either downwards or across the room. The warmth is predominately transmitted by longwave, healthy, infrared radiation. Infrared heat is used in medicine and is known to be gentle and effective: not unlike the roman hypocaust clay flue pipes running through walls carrying hot air and radiating heat inwards.

Due to the low running temperatures, the heating system is well suited to work in combination with natural heat sources such as solar and ground source heat pumps.

The panels are 62.5cm wide and 115cm long with the heating pipes already fully integrated.

Clayworks Heated Clay Panels have an extremely high level of prefabrication allowing for fast, cost effective installation. This saves working hours and drying times on the construction sites and saves significant amounts of time and material resources on site.

BENEFITS

HEALTHY INTERIORS

The panels have all of the health and sustainability benefits of clay when used as an internal building material: breathability, no VOCs, no toxins and no off-gassing. Critically, clay helps to keep room humidity at between 40% and 70% the level at which the majority of adverse health effects are kept at bay including asthma. At these levels the likelihood for airborne infectious bacteria and virus to survive is the lowest.

COOLING SYSTEM

The panels are perfect as a cooling system: if cold water is sent through the water pipes, the system functions as air conditioning without noise, without draft and low maintenance costs.

HISTORIC BUILDING REFURBISHMENT

The panels are particularly valuable for historic building refurbishments due to their permeability. Historic floors can remain undisturbed, without the need for surface mounted radiators.

DESIGN FLEXIBILITY

Just like underfloor heating, integrated clay panel heating increases usable space as it removes the need for radiators. Especially when placed in ceilings, the system offers future design flexibility adding to the lifespan of the building. A minimalist aesthetic is easily achieved.

Partitions can be built easily and the woodfibre panel is already included. The weight is beneficial for cross-room noise reduction and the panels will have all the benefits of clay.

TARGETED HEATING

Wall heating in particular can deliver targeted heat to specific areas where the effect of other heating systems would be lost due to drafts or challenging layouts. This might be particularly valuable in, say, a reception area, particularly behind a desk and along waiting area seating. Cafes and restaurants in open plan spaces (along the back of bench seating for example) and shops in shopping centres which are often exposed or semi-open.

ENERGY SAVINGS

The way we feel warmth depends upon the total energy that reaches us – the more heat radiation, the less heat conduction is necessary. As a result, the room temperature can be reduced by 3 degrees while still giving the same feeling of warmth, enough to reduce heating costs by up to 18%.

The panels have a soft wood fiber panel in the core. This ensures very good insulation values and great stability. The soft wood fiber also provides a thermal separation to the rear. This means that nearly 100% of the heat comes into the room.

SUITABILITY

For heating internal rooms by cladding walls and ceilings, including bathrooms and toilets. Clay panels are not suitable for areas where there is contact with running water.

DATA & PERFORMANCE

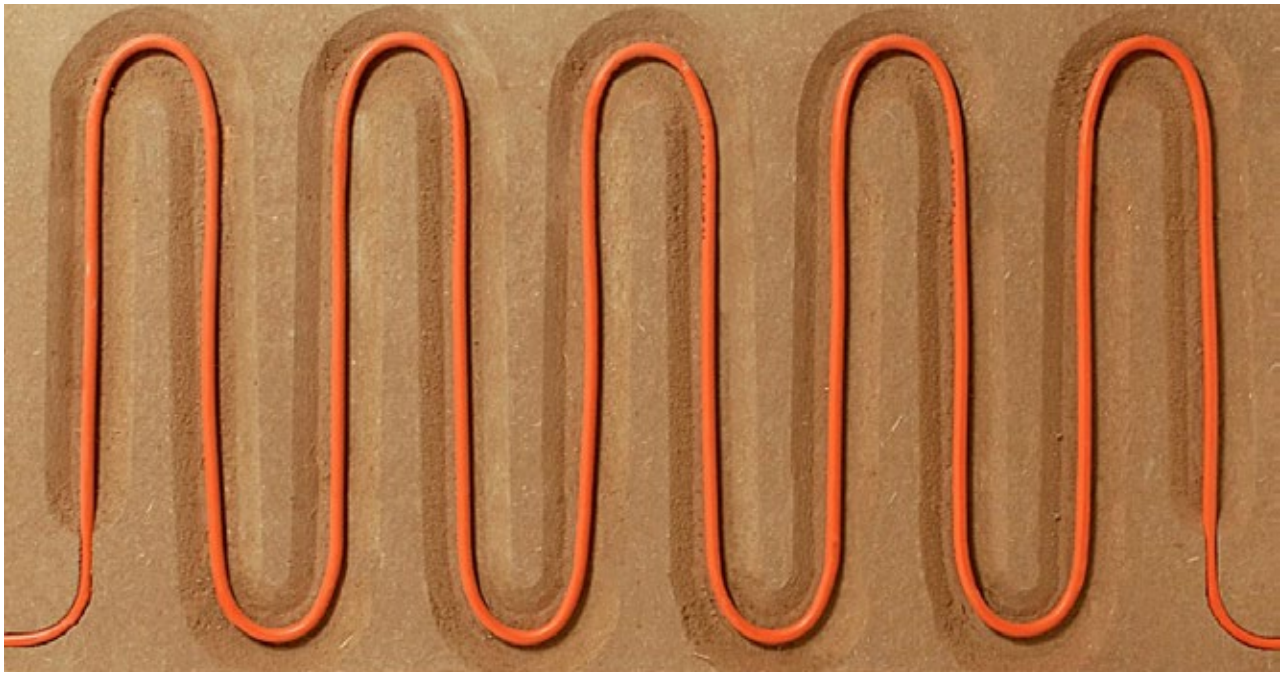
- Excellent sound insulation. Sound can be reduced by high mass material or soft wave reducing material.
- Basic thermal insulation: The core of the Clayworks Panel is 17mm wood fibre which provides good basic insulation.
- High inherent stability – excellent for stud constructions.
- The system regulates humidity, helping to keep a room at about 50%, optimum for helping to prevent asthma as this helps to keep the mucous membrane from drying out.
- Absorbs and stores indoor air pollution.
- The clay's capillary structure, its permeability and the number of micro cavities enables the material to absorb and store odours and smells and Ionise the air, contributing to a feeling of fresh air.
- Energy-efficient: the panels store the warmth from the day and release it slowly in the night hours.
- Extremely low levels of primary operational energy for production.
- Constructed primarily of ecological materials – wood and straw.
- High efficiency due to warmth insulation towards the wall which insulates against heat escaping into the wall or ceiling.
- The clay plasters and panels absorb the warmth of the heating system and deliver it into the room by longwave, healthy warmth radiation.
- Fast temperature response – within 5-10 minutes – due to the low mass compared to full clay panels.
- Convenient panel sizes: Maximum size 62.5 x 115cm / 21 kg. Can be managed by a single person for wall mountings and 2 people for ceilings.
- The system includes end panels and connecting panels.
- Flexible modular system: Up to 8 panels can be connected in a row.
- Enough space for built-in sockets. Sockets with a diameter of up to 68mm can be drilled between the pipes.
- Marked pipe course.
- Savings on labour time and labour cost compared to underfloor heating systems due to less cost for the sub-construction.
- Only 40% of the room size is required for the heating panels: the remaining 60% will be unheated clay panels.
- Significantly less dust sweeping than air convection systems.
- In small spaces, no space for furniture or decoration is occupied.

DIMENSIONS

- Dimensions: 62.5 x 95/115 x 3.1cm.
- Surface area: 0.59 m^2/0.72 m^2.
- Weight: 17.5 kg/panel (= 29.6 kg/m^2)/ 21.5 kg/panel (= 29.6 kg/m^2).
- Heating pipe: 11.6 mm outer diameter – 1.5 mm wall thickness.
- Pipe length: 6.5m.
- Clay application: 15mm finished system.

INSTALLATION

- Fixed with staggered joints on OSB clad walls or timber/metal framed (w = 6cm) studs at 62.5cm centres.
- Fixed on ceilings or to the underside of rafters 31.25cm centres apart.
- On a wall, they can also be fixed to a solid substrate using an adhesive.
- Fixing materials: drywall screws (3.9 x 45mm) or galvanized staples (length 50mm or longer, width 10mm or more, wire gauge 1.4mm or more).
- Fixing distance: approx. 15 cm apart on all tapered edges. On ceilings or the underside of rafters, an additional row through the middle of the length of the panel is required.



INSTALLATION OVERVIEW

We strongly recommend that you contract with an approved installer. The following guidelines are for design and construction planning purposes.

RANGE OF USE

Anywhere within a building except for areas where there is running water. The panels are especially suitable for bathrooms as the clay system absorbs humidity. In a kitchen, the clay plaster significantly decreases the build-up of grease, which tends to occur over time in all kitchens.

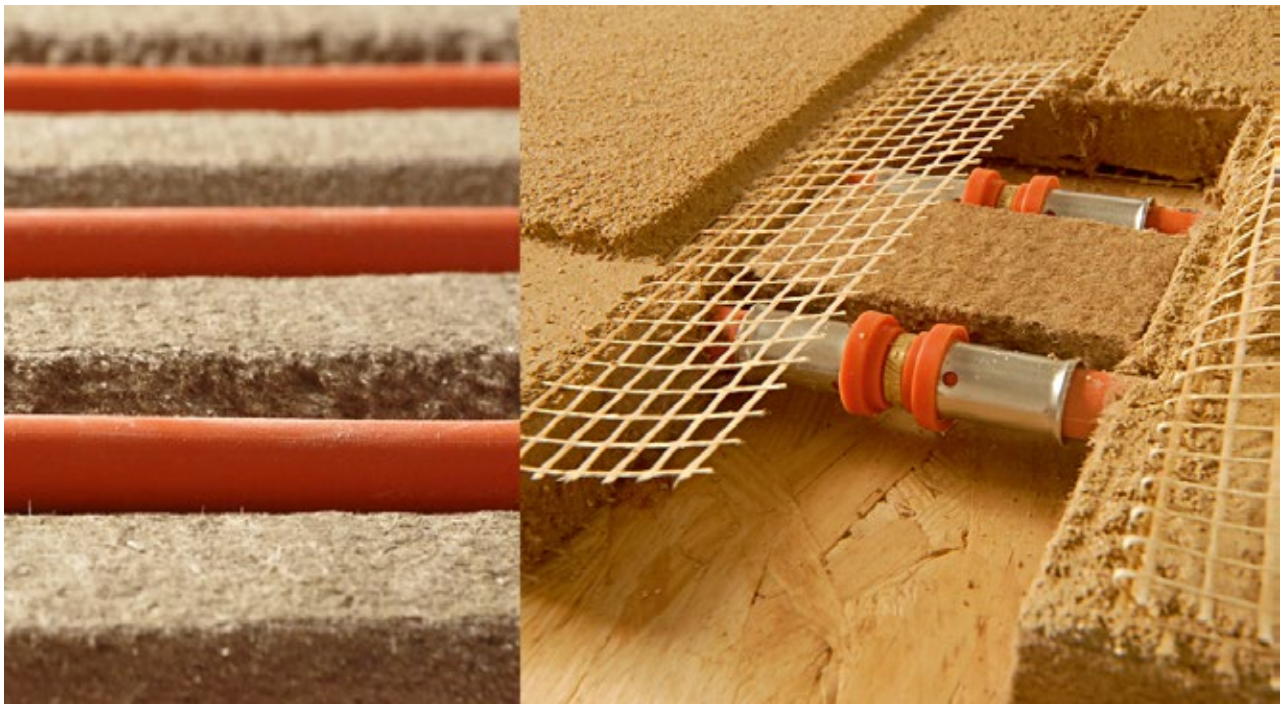
SUB-CONSTRUCTION PREPARATION

Stud walls
The Panels are screwed to studs with a spacing of 62.5cm.

Ceilings
The spacing for ceiling or roof slopes is 31.25cm.

Wood walls
The Panels can be screwed to the wall.

Brick walls or gypsum panels
The Panels can be glued without plugging.



STRUCTURAL-PHYSICAL DATA

Vapour diffusion resistance μtotal < 7.

Density 9.6 x 10^2 kg/m^3 (average).

Thermal conductivity λtotal = 0.073 W/(m•K); s(d)=0.031m.

HEATING

Heating performance 80 W/m^2 (= ca. 48,0/57,6 W/panel) based on a flow temperature of 35°C and a room temperature of 20°C.

HEATING CIRCUIT

Up to 8 panels or 60m pipe length. The feed pipe should be a 16 x 2 mm pipe and therefore doesn't have to be added to the total pipe length.

SOUND INSULATION DATA SHEET

Measurement of sound absorption in a reverberation chamber to EN ISO 354:2003.

Test object: Heating Panel end plate.

Test centre: Lucerne – Technology and Architecture for International Building.

Date of inspection: 20 March 2014.

EXAMINATION PROCEDURE

Expiry of the measurement: The necessary for the calculation of reverberation times are determined by the method with integrated impulse response (bursting of a balloon): The decay curves are determined by direct recording of the decaying sound pressure level with the netdb PRO 12 channel frequency analyzer. For a valid measurement, the decay curve to min needs. be -40 dB evaluable. The measurements are performed on 12 different microphone positions and 3 different sound source positions. The specified in each third reverberation time is the arithmetic mean of 36 measurements. reverberation times are determined with and without test specimen under the same climatic conditions.

DETAILS

Surface of the test object: 10.7 m^2 air.

Temperature: 18.6°C.

Relative Humidity: 50% r. F.

Barometric pressure: 95807 Pa

CARE & MAINTENANCE

Should the panels incur damage, by being knocked by furniture for example, they can easily be repaired by taking out the damaged material and infilling with clay plaster.

Clayworks

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