PCM Plasterboard

For every application

Regulates internal temperatures

Creates more comfortable environments

Reduces heating and cooling costs

Knauf Comfortboard

Phase change plasterboard – thermal mass without the weight

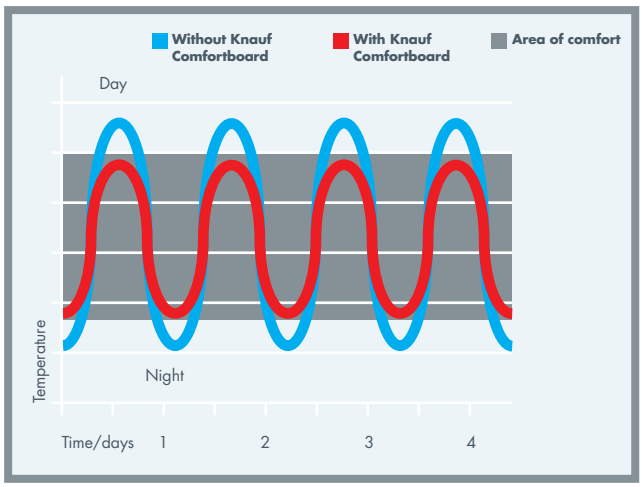
Build for the world we live in

Knauf Comfortboard

Knauf Comfortboard is a revolutionary new plasterboard which significantly reduces or completely avoids the energy consumption of conventional air conditioning and heating in a building, resulting in both energy and cost savings.

Using Micronal phase change material from BASF, this innovative plasterboard absorbs heat energy during the day and releases it at night, keeping living and work areas at a steadier temperature.

During warm days, the building interior stays comfortably cooler, with little or no need for air conditioning. Overnight, as the temperature drops, Knauf Comfortboard releases heat energy back into the room and is then ready to capture excess heat the following day.



Optimised room temperature through active climate control: latent heat accumulator compensates for peak temperatures.

Thermal mass without the weight

An effective way to maintain a pleasant temperature in summer is to increase the thermal capacity of a structure. By absorbing heat in walls or ceilings and releasing it at the right moment, thermal mass acts as a buffer against temperature fluctuations. This is especially true for lightweight structures, which are more prone to overheating in the summer.

Knauf Comfortboard achieves thermal mass, but at a fraction of the weight, giving savings across the build programme. And because it's so simple to install, Knauf Comfortboard is also ideal for upgrading thermal performance in existing buildings.

Knauf Comfortboard – the ideal material in modern lightweight construction. Two layers providing the same thermal capacity as 100mm concrete wall.

KEY FACTS

Reduces or avoids the energy consumption of conventional air conditioning

Long term reliability

Enhanced architectural design flexibility

Maintenance free

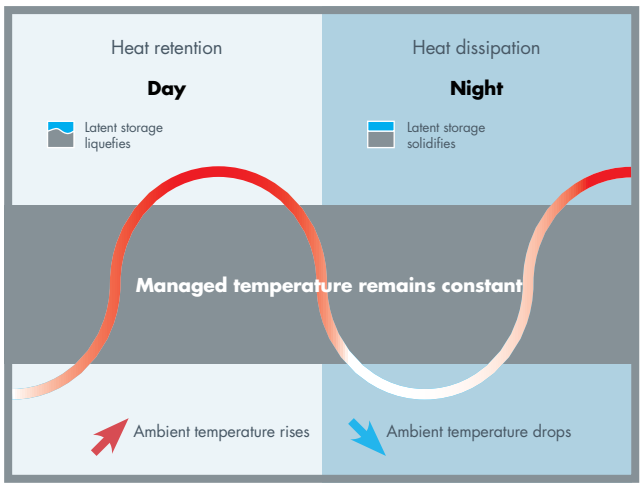
Easy application – installed just like conventional gypsum plasterboard

How it works

The Micronal phase change material in Knauf Comfortboard contains tiny microscopic glass balls filled with wax.

As the room temperature rises the heat energy transfers to the board and heats the wax changing it from a solid to a liquid within the glass beads. This means that the board is essentially taking the heat out of the room allowing it to remain at a constant comfortable temperature.

At night the board will cool back down, especially if the windows are open for ventilation, and the wax will return to a solid, meaning that the next day it will be ready to absorb the heat energy once more. Knauf Comfortboard will continue to work in this cycle, maintenance free, for the lifetime of the building.



The principle of latent heat accumulator work.

Easy to install

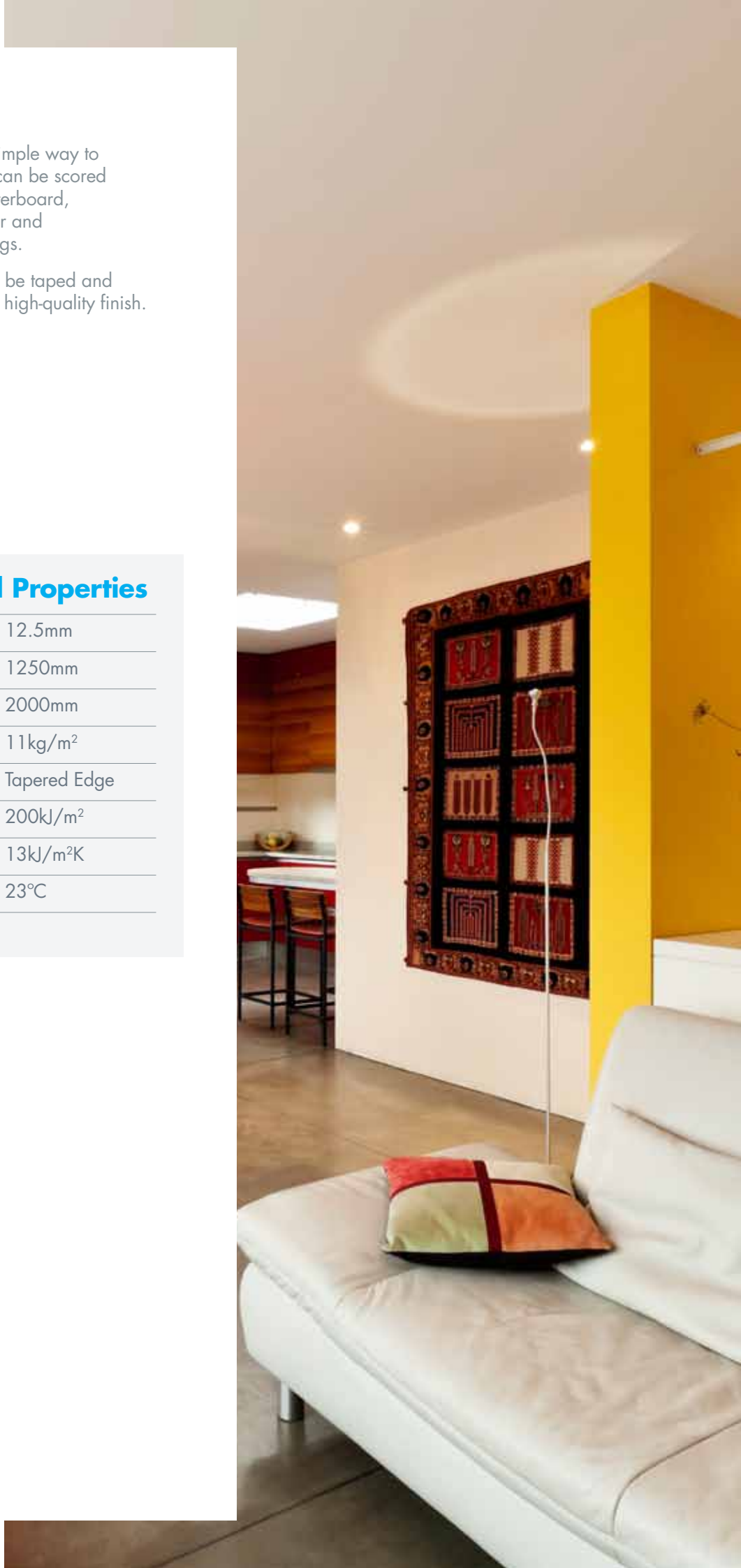
Knauf Comfortboard is a quick and simple way to add thermal mass to any building. It can be scored and snapped, just like any other plasterboard, and is fixed in the same way to timber and metal substructures in walls and ceilings.

Once fitted, Knauf Comfortboard can be taped and jointed or skim plastered to achieve a high-quality finish.

Knauf Comfortboard Properties

Board Thickness	12.5mm
Board Width	1250mm
Board Length	2000mm
Board Weight	11kg/m^2
Edge Type	Tapered Edge
Latent Heat Capacity	200kJ/m^2
Specific Heat Capacity	13kJ/m^2K
Phase Change Temperature	23°C

Manufactured to EN 520

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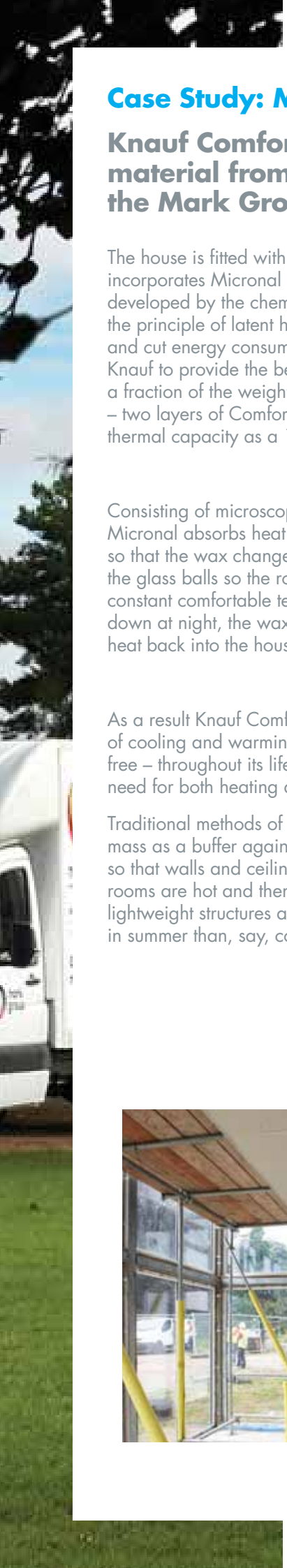

Case Study: Mark Group Eco House, University of Nottingham

Knauf Comfortboard, incorporating Micronal phase change material from BASF, the chemical company, is being trialled in the Mark Group Eco House at the University of Nottingham.

The house is fitted with Knauf Comfortboard which incorporates Micronal phase change material (PCM) developed by the chemical company BASF to exploit the principle of latent heat to stabilise temperatures and cut energy consumption. This technology enables Knauf to provide the benefits of thermal mass at a fraction of the weight of conventional methods – two layers of Comfortboard achieves the same thermal capacity as a 100mm concrete wall.

Consisting of microscopic glass balls filled with wax, Micronal absorbs heat energy as the temperature rises so that the wax changes from a solid to a liquid within the glass balls so the room will cool down and stay at a constant comfortable temperature. When the room cools down at night, the wax turns back into a solid, releasing heat back into the house to keep the temperature constant.

As a result Knauf Comfortboard continues this cycle of cooling and warming the building – maintenance-free – throughout its lifetime and so reduces the need for both heating and air conditioning.

Traditional methods of construction use thermal mass as a buffer against temperature fluctuations so that walls and ceilings absorb heat when rooms are hot and then release it as they cool, so lightweight structures are more prone to overheating in summer than, say, concrete-framed buildings.

Using Knauf Comfortboard enables architects and specifiers to increase thermal mass without having to increase the load-bearing capacity of the structure, which cuts costs across the whole build programme.

Existing buildings can benefit too because Knauf Comfortboard is installed just like any other gypsum plasterboard – it can be scored and snapped and is fixed in the same manner to timber and metal substructures in walls and ceilings. Once fitted, Knauf Comfortboard can be taped and jointed or skim plaster to achieve a high-quality finish.

Acting as a state of the art research facility for both industry and academia, the EcoHouse will enable the benefits of Knauf Comfortboard to be proven and costed in a living environment. The University of Nottingham's Department of Architecture and Built Environment has set up a testing routine where the heat flux across the surface of the board is continually monitored and compared to that of standard plasterboard.

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