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February 2006

WARMCEL®
Insulation Fibre

NBS Plus

LPCB Certificate number 721a

EVT®

WARMCEL® 500
Breathing Insulation

WARMCEL® 300
Loft Insulation

WARMCEL® 100
DIY Home Insulation

Warmcel insulation - the ultimate solution for walls, floors and roofs

EXCEL
Fibre Technology




The Warmcel range of high performance insulation products offers a total solution for the provision of effective insulation in housing, commercial premises and public buildings.

Installed in over one million homes in the UK alone, Warmcel has established its credentials with national housebuilders, architects, local authorities and housing associations over the last 25 years.

Combining exceptional thermal performance with enviable environmental credentials, Warmcel delivers the capability to downsize space heating systems, maximise heat retention and provide a healthy living environment.

Because of its superior insulation properties, Warmcel provides U values beyond current or envisaged Building Regulations requirements, with typical constructions achieving values of between 0.22 and 0.10 W/m²K.

Applications and Installation

WARMCEL® 500
Breathing Insulation

Warmcel 500 combines high levels of insulation and air-tightness with excellent hygroscopic qualities. Warmcel 500 is the only material with BBA approval for use in timber frame structures that is able to demonstrate a 25-year record of successful installations.

For EVT structures, timber frame walls and warm roofs, Warmcel 500 is installed by registered specialist installers. The details of all installers are provided on a BBA-published listing.

For closed panel structures, including walls, floors and sloping roofs, Warmcel 500 is installed using the TurboFill injection system. The TurboFill nozzle, similar in appearance to those used on Grand Prix Formula 1 refuelling rigs, is docked with the panel by means of pre-drilled access holes, through which the Warmcel 500 is injected.
An ingenious pressure sensing system ensures the void is completely filled to the correct density for optimum performance. Because the insulation process is totally discrete and unintrusive, it can be undertaken at the same time as following trades are working and, therefore, it does not impact on the build programme.

Open Panel Walls:
For open panel walls (i.e. walls which are insulated prior to the installation of the internal sheathing) sheathed with vapour permeable external sheathing, Warmcel 500 may be damp spray applied. Once sprayed, it is levelled off to the depth of the studs, ensuring the wall is completely filled, with no air pockets or voids, even around pipework, wiring or other obstructions. Moisture naturally dries out through the sheathing within a few days.

WARMCEL® 300
Loft Insulation

Warmcel 300 loft insulation is also installed by registered installers. The insulation is gently pumped into position over the loft floor to a depth necessary to meet building regulations standards or achieve a higher level of insulation performance, as required. Because the insulation is pumped through a hose attached to the fibre delivery system, access to restricted spaces, such as shallow eaves, or even loft access itself through small loft openings, is easily achieved.

As with Warmcel 500, the loose fill nature of Warmcel 300, ensures that the loft floor is totally covered to provide a complete fill between and over joists, leaving no air gaps through which warm air can escape.

WARMCEL® 100
DIY Home Insulation

Developed for the DIY loft insulation market, Warmcel 100 is supplied exclusively through specialist building materials distributors. The loose fill insulation is provided in conveniently - sized bags, for manual installation over the loft floor area to achieve the same level of coverage and insulation performance as Warmcel 300. As with other Warmcel products, the material completely fills in between and around joists, wiring and pipework to ensure a fully air-tight solution.

Fire Performance

As the photograph demonstrates, Warmcel is extremely resistant to fire. Its remarkable performance is achieved through the addition of simple inorganic salts, enabling it to comfortably meet the fire protection standards required for timber-frame construction and conventional lofts.

Warmcel is accredited by the Loss Prevention Certification Board (LPCB)* for use in composite timber frame wall and ceiling systems in relation to fire resistance. As such, Warmcel is listed in the LPCB 'Red Book', the board's official list of approved fire and security products and services. The Red Book is the authoritative guide to those companies whose operations, products and services achieve compliance with the quality assurance, product approval and certification schemes operated by the LPCB.

In a separate independent fire test, conducted by Chiltern International, on a loadbearing EVT wall panel, the fire resistance properties of Warmcel saw the panel exceed 70 minutes when exposed to temperatures of up to 1000°C.

Throughout the test the external face of the EVT wall panel remained at a cool 17°C.

Thermal Performance

With an impressive thermal conductivity value (k) of only 0.036 W/mK in walls and 0.035 W/mK in lofts, Warmcel's 'in use' performance is further enhanced by its ability to create a high level of air-tightness to help seal a building against air infiltration and prevent thermal convection currents.

The proven methods of application ensure the insulation provides a complete seal to prevent heat loss, eliminating gaps, cracks or other cold bridges.

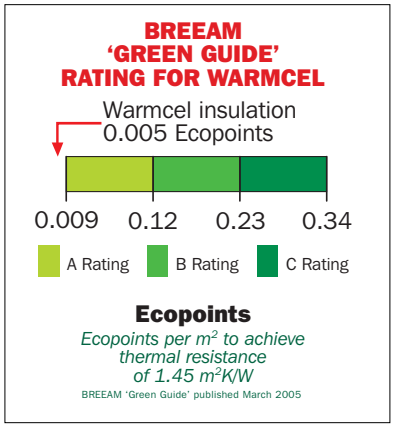
Air-tightness tests undertaken on a scheme of local authority houses in Cardiff by the Centre for Research in the Built Environment (CRiBE), part of the Welsh School of Architecture (WSA) at Cardiff University, demonstrated the air-tightness of these Warmcel-insulated homes outperformed good practice requirements.

Environmental

Manufactured from 100% recycled waste newspaper, Warmcel has extremely low embodied energy, requiring far less energy to produce than any other mainstream insulation material.

Warmcel has zero ODP (Ozone Depletion Potential). It does not contain any added formaldehyde and is free from CFCs, volatile organic compounds (VOCs) or other toxic substances. And by reducing heating demand, Warmcel also plays a major part in reducing household CO_2 emissions.

Under the BRE's Environmental Assessment Method (BREEAM), Warmcel achieved Green Guide Ecopoint 'A' ratings in every application of the insulation in various wall and roof constructions. And in comparison with other insulation materials, the Ecopoints rating for Warmcel was so good it exceeded the current best 'A' rating value.



When, eventually, Warmcel insulation is removed from a building, it can be recycled again at Excel's manufacturing facility or disposed of safely, without creating toxic waste or biodegradability problems.

Sound Insulation

The sound absorption properties of Warmcel provide an effective solution to noise pollution, particularly important in applications where airborne sound can cause a problem for people living or working in adjacent rooms.

Durability

Warmcel is formulated to protect it against any potential hazards that may be encountered in use. It is resistant to biological and fungal attack, treated against insects and is unattractive to vermin. Warmcel is also harmless to other common building components such as copper pipes, electric cabling and metal nail-plate fasteners.

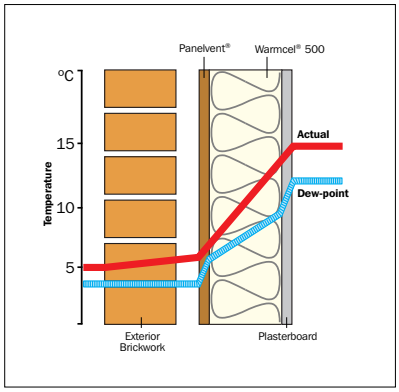
Warmcel® is the only insulation material with BBA approval for use in timber framed structures that is able to demonstrate a 25 year record of successful installations.

*Part of BRE Certification, the LPCB is an internationally recognised certification body responsible for the independent accreditation of fire and security products and services to the standards laid down by the certification authority.

The EVT Standard

The EVT Standard describes a particular make-up of building structure, which performs in a very specific manner. The structure may be individual elements of the building, such as the walls, floor or roof, or the complete building envelope. The fundamental criteria determining if a structure meets the EVT Standard are defined by a combination of the design of the structure, the components used in its manufacture and its 'in use' performance.

EVT Structures



EVT structures comply with the EVT Standard. They combine high levels of insulation with the ability to ensure any natural moisture ingress into the structure always migrates safely and completely to the external atmosphere where it is harmlessly expelled.

Perfect Balance

EVT structures utilise components that provide the perfect balance of vapour resistivity and permeability to achieve effective moisture migration. This balance is designed around Warmcel 500, which has the ability to promote the migration of moisture through the structure and is the only insulation material that has been exhaustively tested to prove its effectiveness in EVT structures.

This unique combination ensures diffusion is maximised, in a controlled way, to make the structure as free to the passage of water vapour as possible, an effect known as Enhanced Vapour Transfer (EVT).

Extensive Testing

All components used in EVT structures have been carefully selected in conjunction with Warmcel 500, following extensive testing, to provide the correct vapour compatibility that allows water vapour to diffuse naturally through the structure without risk of interstitial condensation.

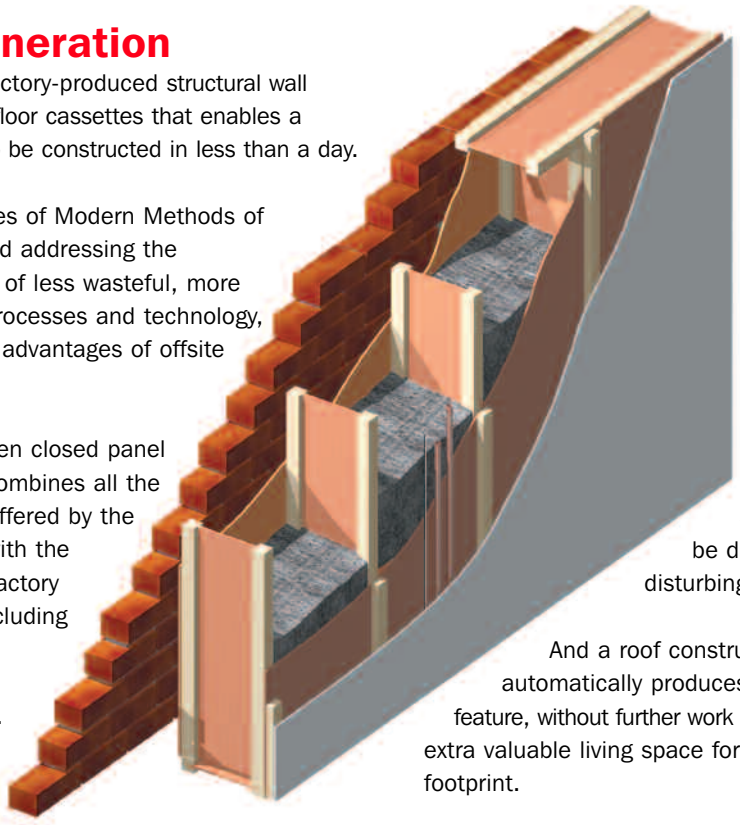
Only approved components will ensure the integrity of the EVT structure is maintained. Substitute components, untested in combination, may not perform to their design criteria.

TRADIS® – The Next Generation

TRADIS is a range of factory-produced structural wall panels, roof plates and floor cassettes that enables a complete house shell to be constructed in less than a day.

Embodying the principles of Modern Methods of Construction (MMC) and addressing the Government's objective of less wasteful, more energy efficient build processes and technology, TRADIS epitomises the advantages of offsite manufacture.

Based on the well-proven closed panel EVT solution, TRADIS combines all the performance benefits offered by the closed panel system, with the erection benefits of a factory engineered product, including dimensional accuracy, consistency and quality controlled compatibility.



Design features of TRADIS also offer on-site advantages. For example, wall panels can be supplied with doorframes and fully glazed windows already in place, so that once erected, the building interior is immediately weather protected.

An in-built service zone on the interior side of each panel facilitates the rapid installation of following services, allowing finishing times to be dramatically reduced without disturbing the integrity of the panel.

And a roof constructed from TRADIS automatically produces a 'Room-in-the-Roof' feature, without further work or adaptation, producing extra valuable living space for the same size house footprint.

Components that meet the EVT Standard

Warmcel® 500

Warmcel 500 is the heart of the EVT Solution. In addition to outstanding thermal performance, its excellent hygroscopic properties promote the migration of water vapour through the wall, floor or roof to the outside. Furthermore, this capability enables it to absorb surplus water vapour at times of high internal humidity and release it when conditions allow.

Composite 'I' Beams

EVT walls, floors and roofs can be manufactured from standard timber, but, for maximum performance, it is recommended that composite 'I' beams are used. They enable the Warmcel 500 to interlock with the wall studs, floor or roof joists, thereby maximising the integrity of the insulated section. Composite 'I' beams are themselves designed for minimal cold bridging, featuring only a thin section web between flanges of sustainable timber.

Panelvent®

For EVT walls, only Panelvent external sheathing offers the correct vapour compatibility for guaranteed performance. The only external sheathing product to have been extensively tested for EVT applications, Panelvent provides high racking strength and exhibits excellent weather resistance.

Paneline

Paneline sheathing board is recommended as the internal sheathing on TRADIS panels to ensure the correct balance of vapour resistivity and permeability is achieved.

All of these components have been selected to create a healthy living environment and do not produce any harmful emissions.

Case Studies

EVT Technology Provides Standard Solution for Housing

EVT Technology has been specified for the construction of a forward-looking house design concept that simplifies the build process and minimises energy consumption and environmental impact, while offering total freedom of internal layout and architectural style. Devised by architects, 'Gn2 Design', the design concept has been employed in the construction of a five bedroom, 300 m^2 contemporary house built in Chelmsford, Essex.

The structure of the house is based on a glulam post and beam frame, which supports the entire weight of the house, avoiding the need for internal loadbearing walls. The frame uses a standardised grid system, with spans corresponding to standard sheathing panel sizes. In addition, the entire frame is produced from a single size section and only one connection type.

Excel EVT panels were used to create the entire external envelope of the building; walls, floors and roof. Based on 250mm deep composite 'I' beams (the same size as the glulam frame section), the panels were constructed between the frame elements, with the floors suspended on hangers, to finish flush with the glulam frame.

The panels were insulated to their full depth with Warmcel 500. Panelvent external sheathing and plasterboard on the internal face complete the EVT panels. This construction delivers U values of 0.14 W/m^2K, 0.14 W/m^2K and 0.25 W/m^2K for the walls, roof and ground floor respectively.

Cardiff Council Complete Recycling Loop to Benefit Tenants

In an innovative recycling scheme, Cardiff Council set up a partnership with Excel to insulate homes on a new social housing development with Warmcel 500 insulation, manufactured from recycled newspapers collected from local households. The scheme of 48 houses was developed by the council to meet high levels of sustainability and comprises a mix of two and three storey houses, ranging in size from three bedrooms to five bedrooms.

The council's decision to use Warmcel 500 was supported by sound transmission tests undertaken by the BRE, which demonstrated the acoustic insulation between adjacent properties significantly exceeds the building regulations Part E requirements, and air-tightness tests, which showed the air-tightness of the homes to be well within good practice requirements.

The houses are based on a sustainable timber frame structure with 140mm deep external walls at the front and rear and on the exposed side walls of the end properties. These walls are completely filled with Warmcel 500, delivering a U value of 0.25 W/m^2K, which has a significant effect on lowering heating bills for tenants.

The agreement to utilise recycled newspaper collected from homes throughout the local authority area also has direct benefits for Cardiff Council in terms of it meeting its own recycling targets.

Building Fabric Meets Sustainability Requirements

The sustainability, insulation performance and structural integrity of Warmcel-insulated TRADIS wall panels were the principal reasons for them being specified by Falkirk Council for the construction of a new primary school extension in Bo'ness, Falkirk. The extension to Deanburn Primary School was designed to accommodate 440 pupils in a structure featuring high levels of sustainability and energy efficiency.

Used as infill sections in the steel frame superstructure of the 2,400 m² school building, the TRADIS panels needed to be self-supporting up to 5m high, enabling them to be used for both the single and two storey wall sections. Using 200mm deep wall panels, Deanburn Primary School was able to achieve an impressive U value for the building walls of 0.15 W/m²K.

The light weight of the structure also minimises the foundation requirement for the school, again reducing impact on the environment.

Externally, the school extension was clad in a combination of architectural masonry, render, Trespa panels and red cedar cladding. The roof coverings comprise green sedum roofs, PVC single ply membrane and Speedeck Speedzip systems.

Quality Approvals

Warmcel has demonstrated its performance and environmental credentials to independent testing bodies throughout Europe. As such, it has received endorsements and accreditations from the most industry-respected authorities across the continent.

BBA BRITISH BOARD OF AGREMENT
ASSESSMENT OF PRODUCTS FOR CONSTRUCTION

EXCEL Industries LTD. Works: Rhymney Gwent
Z-23.11-275
MPA NRW

HAPM
Housing Association Property Mutual Limited

PROVNING · FORSKNING SP

CSTB
le futur en construction

eaga

KVALITETS KONTROLLUTVALGET NORSKE KONTROLLERT VIF

ZURICH

SITAC
Swedish Institute for Technical Approval in Construction
Svenskt Byggodkännande AB

SKH

BOVERKET
National Board of Housing Building and Planning

BSI REGISTERED
FM 00372

TRADA

WALES LAND OF QUALITY

NHBC

LOSS PREVENTION CERTIFICATION BOARD LPCB
Certificate number 721a

Housing Executive
Northern Ireland Housing Executive

BUY RECYCLED
BUY IT, RECYCLE IT, BUY RECYCLED

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