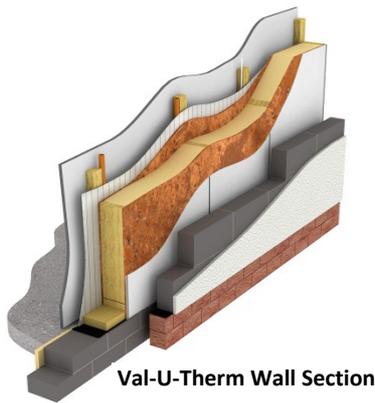


The Benefits of Val-U-Therm®



Val-U-Therm combines the best aspects of SIPs (Structural Insulated Panels) and timber frame - the most widely used structural building method in the world.

Hence Val-U-Therm approach provides one of the world's most advanced hybrid construction systems. Its key attributes are exceptional thermal insulation performance coupled with class-leading environmental credentials in a cost-effective solution.

Val-U-Therm offers a smart integrated building envelope providing relatively thin external walls, floors & roofs with excellent insulation performance. The panels use insulation derived from recycled vegetable oil and injected using the latest HP technology in a factory quality controlled environment that minimises waste.

It is suitable for all types of domestic and commercial architecture, design, external treatment and internal finish.

Val-U-Therm gives a solution to many specifications. A cost-effective route to meet the Fabric Energy Efficiency Standard; a major contribution to 'A' rated Energy Performance Certificates; the highest levels of energy saving & carbon neutrality and PassivHaus can all be addressed. With ever changing Building Regulations, Val-U-Therm provides a practical cost-effective future proof solution for the many challenges now.

By using a Fabric First approach, an investment in Val-U-Therm wall, roof & floor panels will last the life of the building, durable for a minimum 60 years - unlike renewables that need continual control by the occupants as well as frequent maintenance and certain replacement during the lifetime of the property. The Val-U-Therm system gives warm, draught-proof homes with a high comfort factor – **Fit & Forget**.

- ✔ Thermal Performance Benefits
- ✔ Improved Buildability
- ✔ Class Leading Environmental & Sustainability Credentials
- ✔ A Cost-Effective, Best Value Solution



Thermal Performance Benefits

- ✔ Relatively thin panels give best use of the plot/site area because of an integrated approach with excellent insulation performance, minimal thermal bridging and excellent air permeability.
- ✔ Val-U-Therm brings significant reductions in space heating energy costs.
- ✔ Independent research has shown that Val-U-Therm can allow a typical family to have a home that costs less than 50p per week to heat.
- ✔ With the rapid escalation in energy costs predicted over the next ten years, such energy efficiency will be at a premium.
- ✔ This offers financial savings to homeowners & tenants; a practical marketing proposition for private house builders and a real method to attack on fuel poverty for Housing Associations.

Stud Size	V-U-T	Std Kit
90mm	0.21	0.35
140mm	0.15	0.25
184mm	0.13	0.21
235mm	0.11	0.18

circa 40% better performance

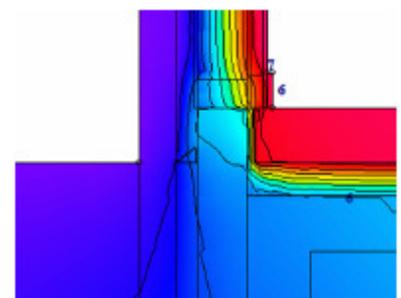
U-Values

- ✔ An array of thermal performance options available from 0.09 to 0.24W/m²K depending on the final wall specification and individual customer requirements.
- ✔ Declared thermal conductivity lambda value (λ_D-value) of 0.025W/mK.
- ✔ Factory quality controlled Val-U-Therm injected insulation fills every space of every void of every panel with insulation.
- ✔ This bonds to every inside surface and elastically expands & contracts with panel movements.
- ✔ Specially developed microcellular technology giving smaller cell size in an improved cell structure (the insulation contains literally billions of bubbles).



Thermal bridging

- ✔ Approximately 25% of heat loss can be through thermal bridging. Our thermally modelled energy saving details can give up to a 10% reduction in CO₂ emissions compared to "standard" timber frame details.
- ✔ Third party accredited thermal bridging/ψ-values are available to give γ-values of circa 0.03W/m²K.



Air permeability

- ✔ A range of air permeability solutions are available to suit natural ventilation and mechanical ventilation, e.g. MVHR.
- ✔ Air permeability detailing is available for a range of levels between 0.5 and 5 (m³/hr/m²)
- ✔ Options to deliver PassivHaus air tightness below 0.6 ACH - 0.46 has been achieved.

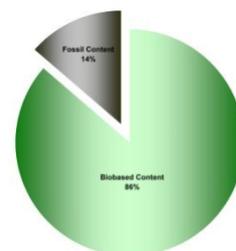
Buildability Benefits

- ✔ An HSE/UKTFA approved Category C Fire Spread Resistant option using non-combustible sheathing is available.
- ✔ Control of thermal bridging and air tightness is more assured and less dependent on site workmanship.
- ✔ Val-U-Therm has no 'tacked-on' awkward extra layers of insulation on the outside or inside of the structure – all the factory injected insulation is integrated with the building panel.
- ✔ Where required, windows and external doors (even patio doors) can be factory fitted before the panels are transported to site.
- ✔ No requirement for "special" wall ties.
- ✔ Construction times are reduced by at least one third or more, dependent on the factory manufactured proportion.
- ✔ Less on site materials handling, storage, waste, theft & security issues.
- ✔ Val-U-Therm panels can be erected extremely quickly thereby reducing timescales and speeding up the build programme.
- ✔ Greater accuracy and a better standard of finish after handover.



Environmental & Sustainability Benefits

- ✔ By far the largest environmental saving is from reduced energy use after construction and during the life of the building using Val-U-Therm panels.
- ✔ Component parts either recycled or FSC, PEFC certified with BRE Green Guide A or A+ rating.
- ✔ The insulation is based on recycled vegetable oil - 86% bio-based (14% fossil-based) content has been independently verified to ASTM-D6866 by Beta Analytics in the USA.
- ✔ The insulation material has zero ozone depletion potential (ODP).
- ✔ Embodied energy is largely irrelevant as the Val-U-Therm insulation saves over 1,000 times more energy than was used to make it in the first place.
- ✔ The blowing agent is CFC (chlorofluorocarbon), HFC (hydrofluorocarbon) and HCFC (hydrochlorofluorocarbon) free.
- ✔ Val-U-Therm panels and the constituent timber & polyurethane insulation can be recycled into new products or incinerated for energy as a substitute fossil fuel at the end of their final service life.



Best Value

- ✔ Bulk purchasing of our raw materials not only reduces green miles but allows us to pass on the economies to our customers.
- ✔ The CAD/CAM timber frame manufacturing process includes optimising saws to minimise timber waste. Even the minimal off-cuts are incinerated to provide heat for the factories & offices.
- ✔ The Val-U-Therm insulation injection process results in less than 1% wastage – compare this to cutting and fitting insulation of any type on or off-site.
- ✔ Based on conventional timber frame, Val-U-Therm is BBA third party accredited (Certificate No. 12-4892), is accepted by NHBC, Premier Guarantee & conforms to all appropriate generic British & European standards.
- ✔ Best use of site and/or plot area – for a given thermal performance, for instance, another two houses could be fitted on to a 50 house development because of the narrower walls.
- ✔ Timber Frame is a dry form of construction, there is no drying out period. Early occupancy is assured as there are generally far less snagging issues and no drying out cracks common in wet construction.
- ✔ The Val-U-Therm approach includes quality control checks at all stages of production.



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