

## THERMAL FLOOR SYSTEM WITH STRUCTURAL BOARD

Jablite Thermal Floor System with Structural Board is our own Jablite-designed structural insulation system with pre-stressed concrete beams and insulation panels that are cut to size off-site to guarantee a fast, easy and safe build.

The Jablite Thermal Floor System is completed by the installation of 75mm (minimum) structural concrete topping\*:

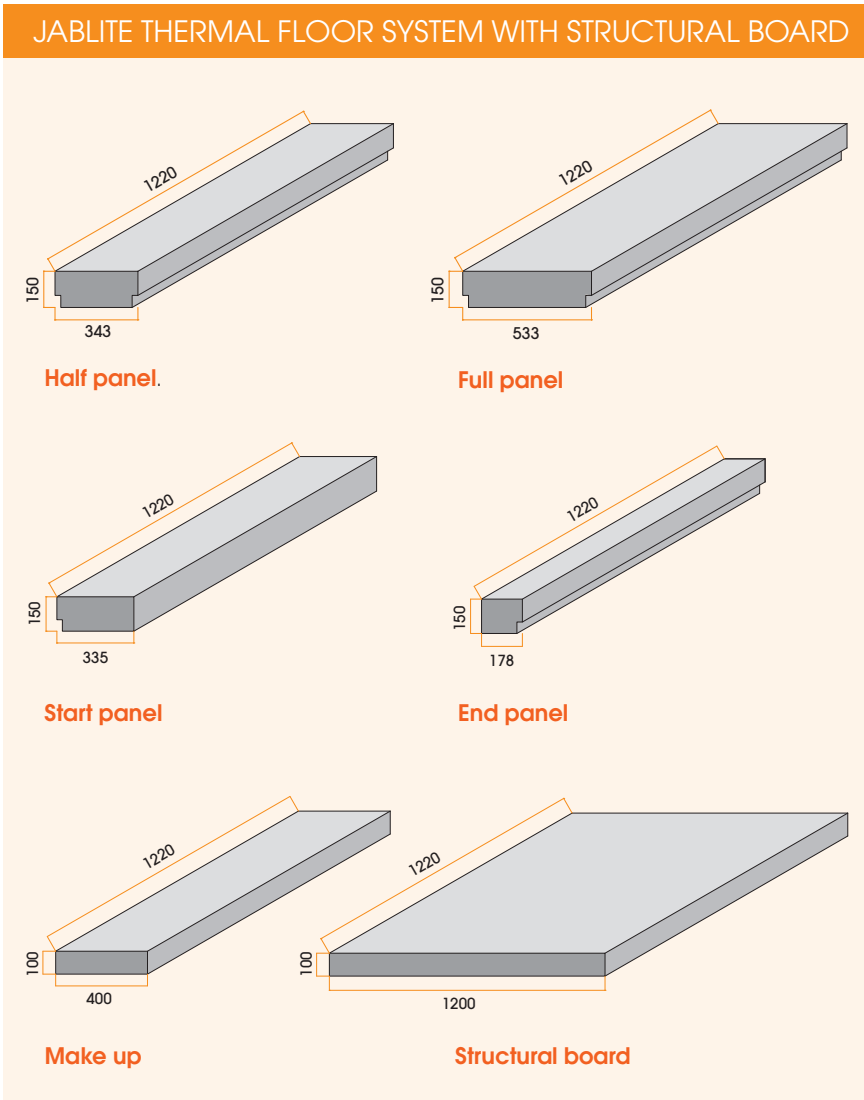
- Concrete with macro-polymer fibres: C25/30 with maximum 10 mm aggregate and 4 Kg/m<sup>3</sup> Durus S400, 45 mm long and 0.9 mm in diameter.
  - Concrete with micro-polymer fibres: C25/30 with maximum 10 mm aggregate and 0.91 Kg/m<sup>3</sup> Fibrin X-T, 13 to 19 mm long and 22 mm in diameter.\*\*
  - Concrete reinforced with steel mesh: C25/30 concrete with maximum 10 mm aggregate and A142 steel mesh, ribbed bar to BS 4483:2005.
- The suspended thermal floor system consists of pre-stressed concrete beams positioned to meet the designed load requirement combined with Jablite infill insulation panels and Jablite structural boards.
  - Jablite supplies this BBA-certified (14/5094 Product Sheet 4) thermal floor system with beams and insulation supplied pre-cut to fit the beam and designed to meet the specified U-value requirements.

### Key Benefits

- BBA Certified (14/5094 Product Sheet 4)
- Fast and easy installation
- Achieves specified U-Values
- Outstanding Psi Values assist with Part L Compliance
- Reduces depth of required excavation and spoil removal
- Improves Health & Safety on site
- Zero waste left on site

\* For further information please refer to the BBA certificate

\*\* NHBC do not accept micro-polymer fibre structural toppings



**Sustainability and Quality**

Jablite insulation can be supplied in EPS (expanded polystyrene) or in HP (high performance) EPS to provide the required thermal or thickness performance.

Expanded Polystyrene is A+ rated in the BRE Green Guide to Specification.

Jablite EPS insulation is 100% recyclable and Jablite provides a site collection of clean material cut offs and these are recycled back into insulation boards.

Jablite manufactures to ISO 9001 and ISO14001 certified standards.

**CE Marking**

Jablite Thermal Floor System with Structural Board is CE marked with DOP available on request.



**PRODUCT COMPARISON : TARGET U-VALUE: 0.14W/M<sup>2</sup>K P/A RATIO: 0.6**

	JTFS - Structural Board HP Infill HP Structural Board	Block & Beam Kingspan Kooltherm K103 (Thermal Conductivity 0.018) Phenolic	Block & Beam Celotex F15000 (Thermal Conductivity 0.021) PIR
Underfloor void	150	150	150
Beam depth	150	150	150
Concrete block (1.13)	N/A	Yes	Yes
Levelling screed	N/A	Yes	Yes
Insulation above beam	100	110	125
Concrete/Screed	75	65	65
Total build-up	475	475	490
Increased dig depth mm	N/A	N/A	15
Increased spoil m <sup>3</sup>	N/A	N/A	2.7225
Green Guide	A+	TBA	A+

**PERMITTED LOADINGS**

Description	Characteristic loads for single-family dwellings	Maximum characteristic loads for single-family dwellings or communal areas in blocks of flats or other suitable buildings
	Concrete topping reinforced with micro polymer fibres	Concrete topping reinforced with macro polymer fibres or steel mesh A142
Imposed uniformly distributed load (UDL) (kN m <sup>-2</sup> )	1.5 <sup>(1)</sup>	3.0 <sup>(1)</sup>
Imposed concentrated load (kN)	2.0 <sup>(1) (2)</sup>	4.0 <sup>(1) (2)</sup>
Line load partition parallel and perpendicular to the beam (kN m <sup>-1</sup> )	1 <sup>(3)</sup>	3.0 <sup>(3)</sup>
Allowance for moveable partition (kN m <sup>-2</sup> )	1.0 <sup>(3)</sup>	1.0 <sup>(3)</sup>
Finishes (kN m <sup>-2</sup> )	0.5	0.5

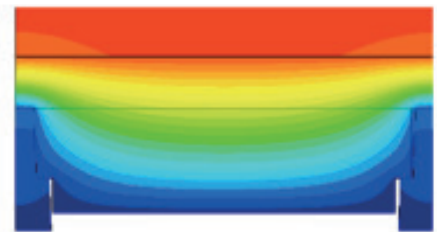
Please refer to the BBA certificate for more information

**U-values: Achieving Part L 2013**

A key element of the Building Regulations relating to insulation is Approved Document L (Part L), which covers the conservation of fuel and power in existing and new build constructions. Part L stipulates minimum performance or backstop fabric element values and aligns the overall building performance and CO<sub>2</sub> emissions targets with notional models.

The DER (Dwelling Emission Rate) must be lower than the TER (Target Emission Rate) when calculated in SAP.

Fabric element values are the U-Values obtained by the specified construction types proposed for any particular build. Designers have flexibility under Part L but must ensure they keep below the TER therefore lower U-Values may be required. Jablite Thermal Floor System provides a simple means to achieving improvements on the overall DER allowing designers to meet and exceed Part L requirements.

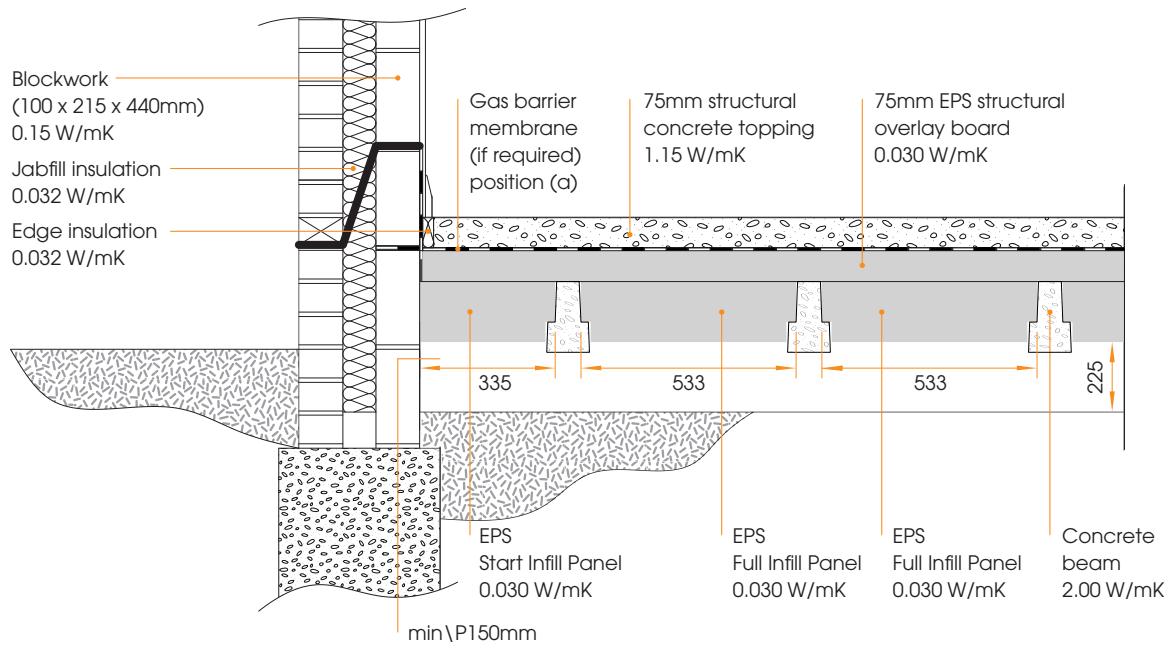


**INDICATIVE U-VALUES – BASED ON 155MM BEAMS**

P/A	Grey 150mm Infill Panel Grey 75mm Top Sheet		Grey 150mm Infill Panel Grey 100mm Top Sheet		Grey 150mm Infill Panel Grey 125mm Top Sheet		Grey 150mm Infill Panel Grey 150mm Top Sheet		Grey 150mm Infill Panel Grey 200mm Top Sheet	
	A	B	A	B	A	B	A	B	A	B
0.80	0.16	0.17	0.14	0.14	0.13	0.13	0.11	0.12	0.10	0.10
0.70	0.16	0.16	0.14	0.14	0.12	0.13	0.11	0.12	0.10	0.10
0.60	0.16	0.16	0.14	0.14	0.12	0.13	0.11	0.11	0.09	0.10
0.50	0.15	0.16	0.14	0.14	0.12	0.12	0.11	0.11	0.09	0.09
0.40	0.15	0.15	0.13	0.13	0.12	0.12	0.11	0.11	0.09	0.09
0.30	0.14	0.15	0.13	0.13	0.11	0.12	0.10	0.11	0.09	0.09

A = 100% Full Panel Installation    B = 75% Full Panel / 25% Half Panel Installation

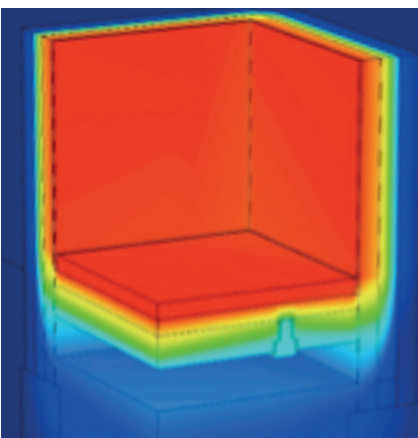
PSI VALUES



Construction adjacent to wall

Psi Values: Achieving Part L 2013

The design and construction of floor to wall junctions must be considered to limit excessive heat loss and air filtration. Designing superior junctions reduces the impacts of heat loss through thermal bridging, see diagram below.



Thermal bridging is measured by calculating the junction Psi ( $\psi$ ) Value. Psi ( $\psi$ ) Values are a measure of the linear thermal transmittance of a thermal bridge and have units of W/mK per linear meter.

Psi Values (W/mK) are used to calculate the Y-Value (W/m<sup>2</sup>K) for use in the SAP calculator for the effect of non-repeating thermal bridges. To calculate the Y-Value, the length of each thermal bridge is multiplied by the respective Psi ( $\psi$ ) Value.

In addition to performance uplift, improved Psi ( $\psi$ ) Values can help create flexibility in design and have the potential to reduce new build costs.

The example on the right indicates the improved Psi ( $\psi$ ) achieved by using Jablite products.

IMPROVED PSI ( $\psi$ )	
Junction	Psi ( $\psi$ ) Value (W/m <sup>2</sup> K)
Example using Jablite Thermal Floor System	0.057 *
Accredited Construction Details	0.16 **
Sap Conventions Document Default	0.32 **
Jeffloor example in BBA Certificate	0.07

\* Value calculated on the below junction model  
 \*\*Values taken from Table K1 SAP

## COMPARISON OF INSTALLATION TASKS

	JTFS - Structural Board HP Infill HP Structural Board	Beam & Block Kingspan Kooltherm K103	Beam & Block Celotex F15000
1 Install beams	✓	✓	✓
2 Install Infill Panel	✓	N/A	N/A
3 Install Structural Board	✓	N/A	N/A
4 Install Membrane or tape joints	✓	✓✓	✓✓
5 Install Concrete/Screed	✓	✓	✓
6 Install Concrete Blocks	N/A	✓	✓
7 Grout/Levelling Compound	N/A	✓	✓
8 Install Sheet Insulation	N/A	✓	✓

### Health and Safety

Jablite Thermal Floor System is lightweight and easy-to-handle; it can be cut with a hand saw eliminating the need to use a construction chainsaw.

The EPS insulation blocks can be easily slotted into place reducing the risk of injuring hands over traditional block procedures.

The lightweight insulation boards can be easily moved around the site with no need for fork lift trucks.

## INSTALLATION GUIDE

1. A DPC is laid on top of the bearing and end walls.
2. The pre-cast concrete beams are positioned at approximate locations and centres as shown on the approved drawing. Concrete is poured between multiple beams.
3. Starter panels are attached to the first beam. The beam and panels are then positioned tightly against the wall.
4. Accurately position the remaining beams in line with the approved layout drawing using spacer / closure blocks. The spacer / closure blocks are bedded in mortar.
5. Install the remaining infill panels between the suspended concrete beams.
6. The panels can be cut with a handsaw where required. Where a panel has to be cut down, it must be at least 300mm long and located at the edge of the floor. Extra care should be taken to avoid damage and foot traffic. Offcuts greater than 300mm may be used elsewhere in the floor zone.
7. Make-up infill panels can be used to accommodate the gaps in non-standard beam spacing's. These are supplied 400mm wide and cut to suit on site as per the approved drawing. Make-up panel should not be installed greater than 400mm wide.
8. Finally install the End Panels to complete the infill installation.
9. A gas or damp proof membrane can be installed where required, either between the uppermost layers of insulation and the concrete topping or between the infill and Structural Boards.
10. If gas carcassing or underfloor heating pipes are also specified, these can be secured to the uppermost surface of the structural board using standard pipe clips. In this situation it's advisable to install any membrane between the infill panels and the structural board. Take care not to puncture the membrane.
11. Jabfloor edge strip insulation, (minimum thermal resistance  $\geq 0.75 \text{ m}^2 \cdot \text{KW}^{-1}$ ), are installed against the perimeter walls.
12. If a steel mesh is specified spacers should be positioned over spreader plates, Min four per  $\text{m}^2$  and Min 50mm x 50mm. These should be installed to position the steel mesh at the correct level – mid depth of the concrete topping.
13. The EPS panels are cut as appropriate to accommodate service penetrations, eg soil vent pipes, and the resulting gaps filled with expanding foam or other insulation to minimise local cold bridging and air infiltration.
14. Although they can withstand light foot traffic, care should still be taken not to walk unnecessarily over the installed EPS panels. If a temporary working platform is required, the panels should be covered with a suitably-rigid board. To avoid damage to the panels, the structural concrete topping should be laid as soon as possible after the blocks have been installed.
15. Where a membrane is not positioned directly over the uppermost layer of insulation the board joints should be taped with minimum 75mm wide masking tape prior to installation of the structural concrete topping.
16. When using a concrete pump, truck or skip, concrete should not be discharged onto the polystyrene units from heights greater than 500mm and concrete heaps must not be formed over 300mm high.
17. When wheelbarrows are used, planks must be placed to spread the wheel load to the precast concrete beams. Spot boards must be used when tipping and shovelling.
18. The structural concrete topping is placed and compacted. Provision should be made for a suitable concrete finish to be achieved, preferably without standing on the blocks e.g. by use of a self-levelling concrete topping.