

Technical Information - Structure

At a glance

- The Low Carbon Construction Building System panels are faced on both sides with 15mm OSB/3, bonded to the polyurethane insulation core during manufacture.
- Loadbearing and non-loadbearing with BBA and CE certification.
- Lifespan is comparable to any traditional building method
- Width: 1200mm.
- Length: maximum 6000mm.
- Depth: 175mm External/Separating Walls & 100mm Internal Walls.
- Weight: maximum of 25.50kgs/m².

More detail

Traditional construction methods rely on bricks, blocks and conventional timber frames, however the Low Carbon Construction Building System is based on Structural Insulated Panels or SIPs. SIPs are high performance, lightweight prefabricated panels that can be used in floors, walls and roofs in both residential and commercial buildings. SIPs are made up of a polyurethane insulation core bonded between two layers of high-density facing, Oriented Strand Board grade 3 (OSB/3).

The Low Carbon Construction Building System panels are 175mm (external/separating walls) and 100mm (internal walls) thick, consisting of a rigid polyurethane core between two layers of 15mm, Type 3 OSB. During manufacture, the insulation core is autohesively bonded to the facings, providing a more reliable adhesion than traditional bonding processes. This strong structural bond between the layers is essential to the load bearing capacity. The composite assembly provides stiffness, strength and predictable responses to applied loads. These relatively light panels can transmit high loads, reducing the need for internal studding.

SIPs are manufactured in closely controlled factory conditions, resulting in a building system that is exceptionally strong, energy efficient and cost effective. The strict quality control procedures that ensure quality and consistency between panels mean that the Low Carbon Construction Building System has been recognised by the majority of the main building warranty providers. It also holds CE, BBA and BM Trada Certification. In terms of durability the Low Carbon Construction Building System panels are comparable to that of OSB/3 to BS EN 300.

The Low Carbon Construction Building System can be used to create floors, roofs and both loadbearing and non-loadbearing walls. The panels are 1.20m wide and can be manufactured up to 6.0m in length to create double height spaces. Both the size and placing of the openings, such as windows and doors, are considered in the initial structural calculations for racking resistance, however if necessary, the openings can be moved and added to with relative ease following the advice of a structural engineer.

The thickness of the walls from the Low Carbon Construction Building System allows more internal floor space for the same external dimensions of traditional methods. For example, to achieve a U-value of 0.18W/m²K, the finished Low Carbon Construction Building System wall can be just 223mm thick, compared to the 390.5mm and 430mm thickness of timber and masonry respectively.

SIPs can form both pitched and flat roof structures and be finished with any form of roof covering. Pitched SIP roofs are beneficial as they typically provide an open, unobstructed roof void that is part of the thermal casing of the structure. This makes it ideal for use as a room in a roof structure. Flat roofs are classed as cold flat roofs and spans may be limited by requirements for ventilation.

All traditional types of coverings and claddings, for example, tiles, slate and profiled metal, can be used on SIP structures. The cladding forms a rain screen for the structure behind.



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