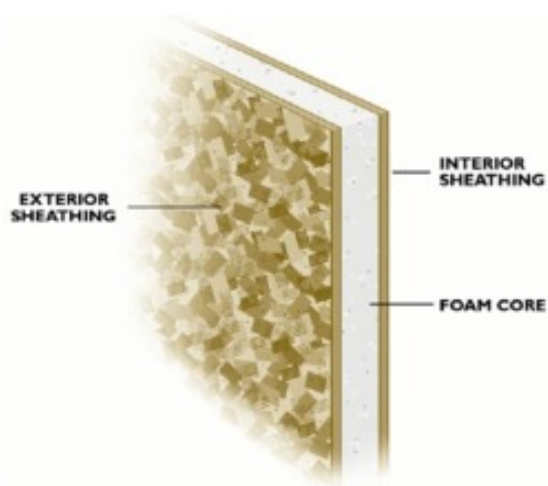


DEFINITION OF SIPS

SIPs have been in use since the 1940s, so they are by no means a new building material. It is only in the last few years however, that the popularity of building with SIPs has become a revolutionary phenomenon.

“SIP” is an acronym for Structural Insulated Panel. SIPs consist of two outer skins and an inner core of an insulating material to form a panel that can be used for walls, roofs, or floors. Most structural panels use oriented strand board (OSB) for their facings, although plywood can also be used. OSB is the more popular favorite because it is available in large sizes and it meets with the rigorous testing needed for code approvals. The core of SIPs can be made from numerous materials, including molded expanded polystyrene (EPS), extruded polystyrene (XPS), and urethane foam. When installed in a home or commercial building, the SIP provides both structure and insulation.



While most commonly used in walls, SIPs can also serve as load-bearing floors, ceiling and even foundation components. Most SIPs are designed to carry the entire range of structural loads in a building. The insulating core and the two skins of a SIP are nonstructural and insubstantial in themselves, but when pressure-laminated together under strictly controlled conditions, these materials act synergistically to form a

composite that is much stronger than the sum of its parts. The resulting sandwich panel product acts like an engineered I-beam, resisting both compressive forces from above and buckling forces from the side. Engineering tests show that, depending on the type of structural test being administered, SIPs range between two and seven times stronger than traditional framing.

Stock SIPs are produced in thicknesses from 4 ½-in. to 12 ¼-in. and in sizes from 4 ft. by 8 ft. up to 8 ft. by 24 ft. Their R-values range from about R-15 for a 4 ½-in. EPS or XPS panel to higher than R-32 for a 6 ½-in. urethane panel. A 12 ¼-in. EPS panel is rated at R-45.

Be careful not to mistake other building panels as SIPs. As Michael Morley points out in his book, "Building with Structural Insulated Panels (SIPS)", building panels come in many different configurations, known variously as foam-core panels, stress-skin panels, nail-base panels, sandwich panels, and curtain-wall panels, among others. Many of these building panels are nonstructural, while some have no insulation at all. And the term "panelized construction" can also include prefabricated stud walls and other configurations associated with the modular industry. The main difference between the aforementioned types of panels and SIPs is that SIPs have **self-supporting characteristics** and they provide **insulating properties** to the exterior envelope of a building.



SIP panels are manufactured in sizes up to 8' X 24'. Facings are 7/16" OSB with solid Expanded Polystyrene (EPS) interior.