



# SIPS FREQUENTLY ASKED QUESTIONS

## 1. What are Structural Insulated Panels (SIPs)?

Global Building Solutions' Structural Insulated Panels (SIPs) are high performance building panels used in floors, walls, and roofs for residential and light commercial buildings. The panels are typically made by sandwiching a core of rigid foam plastic insulation between two structural skins of oriented strand board (OSB) or Fiber Cement Board (FCB). GBS SIPs are manufactured under factory-controlled conditions and can be custom designed for each home. The result is a building system that is extremely strong, energy efficient and cost effective. Building with SIPs save time, money and labor.

## 2. How much faster is building with structural insulated panels?

SIP homes go up faster than traditionally framed buildings. SIPs can be supplied as ready-to-install building components when they arrive at the jobsite, eliminating the time needed to perform individual jobsite operations of framing, insulating and sheathing stick-framed walls. Window openings may be precut in the panels, and depending on the size, a separate header may not need to be installed. Electrical chases are typically provided in the core of panels, so there is no need to drill through studs for wiring.

## 3. How green are structural insulated panels?

**Energy efficiency** - Structural insulated panels are one of the most environmentally responsible building systems available. A SIP building envelope provides high levels of insulation and is extremely airtight, meaning the amount of energy used to heat and cool a home can be cut by up to 50 percent. The energy that powers homes and commercial buildings is responsible for a large portion of greenhouse gasses emitted into the atmosphere. By reducing the amount of energy used in buildings, architects, builders, and homeowners can contribute to a clean environment for the future.

**Resource use** - The insulation used in SIPs is a lightweight rigid foam plastic composed of 98% air, and requires only a small amount of petroleum to produce. The foam insulation used in panel cores is made using a non-CFC blowing agent that does not threaten the earth's ozone layer.

**Waste minimization** - Since SIPs are prefabricated in the factory, there is less jobsite waste that needs to be landfilled. Factory fabrication is often done using optimization software, and many manufacturers recycle factory scrap to make other foam products.

## 4. How do structural insulated panels improve indoor air quality?

The tightness of the SIP building envelope prevents air from gaining access to the interior of the home except in controlled amounts. A controlled indoor environment is both healthy and comfortable. Humidity can be controlled more easily in a SIP home resulting in a home that is more comfortable for occupants and less prone to mold growth and dust mites.

**5. Do structural insulated panels block sound transmission?**

The sound resistance of a SIP wall depends on the thickness of the gypsum drywall applied, the exterior finish applied, and the thickness of the insulating foam core that is used. SIPs are especially effective at blocking high frequency noise, and most homeowners notice the quiet comfort of a SIP home.

**6. Are structural insulated panels susceptible to mold and mildew?**

An airtight SIP building envelope forms the basis of a successful mold control strategy. The extremely low levels of air infiltration in SIP buildings allow for incoming air to be provided in controlled amounts by air handling equipment. Proper dehumidification of incoming air following ASHRAE standards will create an environment where mold physically cannot grow. In addition to creating an airtight structure, SIPs are solid and free of any cavities in the wall where moisture can condense and cause unseen mold growth.

**7. What is the R-value of structural insulated panels?**

R-values are used for measuring thermal resistance. The bigger the number, the better the building insulation's effectiveness. For SIPs it depends on the thickness of the SIP and the type of core material that is used. Average R-rating for typical EPS SIPs are:

<b>4" SIP</b>	<b>R-15.4</b>
<b>6" SIP</b>	<b>R-23.1</b>

Static R-values, like those included in the chart, rate the effectiveness of insulating material. However, they do not accurately describe how products perform in a real world setting. When fiberglass or other types of insulation are installed, they are installed around structural members, made of wood or metal, that have very poor insulating value. Field-installed insulation materials are also prone to installation imperfections. The Department of Energy's Oak Ridge National Laboratory has studied and tested the performance of entire wall assemblies in large sections. The resulting whole-wall R-value data reveals that a 4.5" SIP wall, rated at R-14, outperformed a 2"x6" wall with R-19 fiberglass insulation.