



Supreme Insulated Panel Systems, LLC.



What are SIPs?

Structural insulated panels (SIPs) are high-performance building systems for residential and commercial construction. The panels consist of an insulating foam core sandwiched between two skins of structural sheathing, typically magnesium oxide board (MgO), oriented strand board (OSB), or steel. SIPs are manufactured under factory-controlled conditions and can be fabricated to fit nearly any building design. The result is a building system that is extremely strong, energy-efficient, and cost-effective.

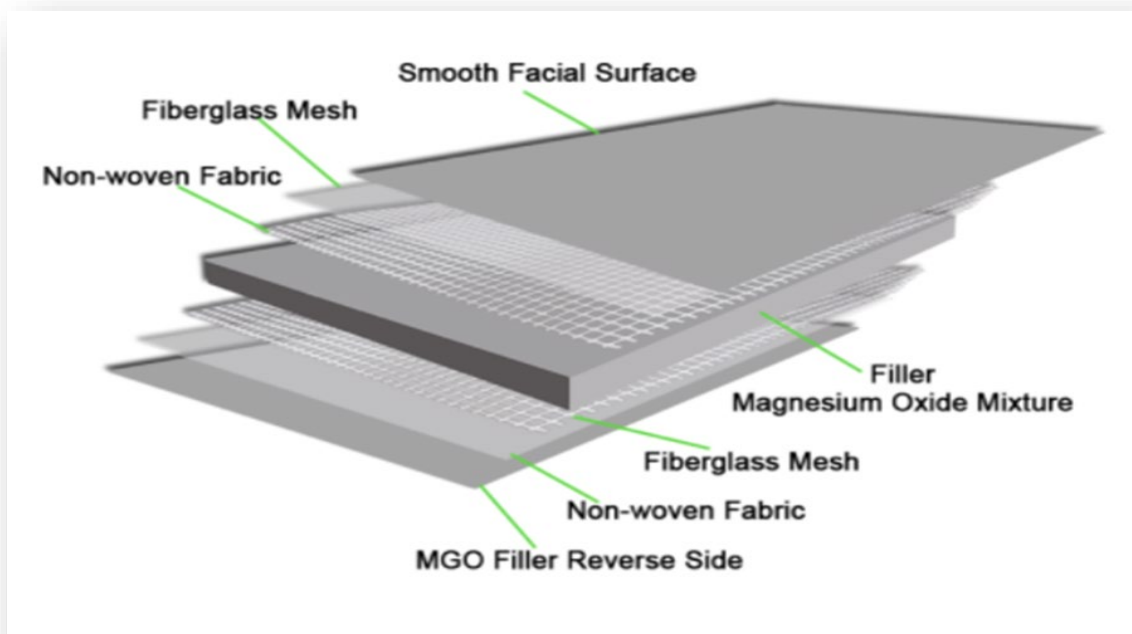




What is MgO Board???

Magnesium oxide board “MgO board” is a factory-made, non-insulating sheathing board product. It can be used for many applications, including wall and ceiling linings, fascia’s, soffits, tile backing, and underlayments. It is made of magnesium oxide, a type of mineral cement, and is commonly called “MgO” (pronounced emm-gee-oh) due to its chemical composition of magnesium (chemical symbol Mg) and oxygen (chemical symbol O). Think of MgO as a type of sheathing board— sort of like drywall or cement board—but with much-improved characteristics such as fire resistance, weather ability, strength, resistance to mold and mildew, and so on.

MgO is available in many forms and for building construction, comes in various thicknesses and sheet sizes. It also comes in various grades, such as smooth finishes, rough textures, and utility grades. It is white, beige, or light gray in color and has a “hard” sound when rapped with your knuckles— somewhat like a Portland cement board. There are dozens of companies that make MgO boards, most of which are in Asia. There are several large producers, but most are small local manufacturers who serve a region.





Fire Resistance of MgO

- The photographs below are taken from a fire test. A building was constructed using MgO Sips on one side and traditional timber framing construction on the other. Both sides were constructed to meet requisite building codes.
- Results show that MgO panels greatly outperform traditional building methods in a fire event.





Benefits of Building with SIPs

1. Exceptional Thermal Performance

Once installed, SIP panels deliver unrivaled insulation and airtightness, which reduces energy costs over the building's lifetime. SIPs are known to be about 50% more energy-efficient than traditional timber framing. A SIP building envelope has minimal thermal bridging and delivers excellent airtightness, which lends itself ideally to LEED and net-zero-ready building standards.

2. Healthier Air Quality

A SIP home or commercial building allows better control over indoor air quality because the airtight building envelope limits incoming air to controlled ventilation which filters out contaminants and allergens. The SIP envelope doesn't have the voids or thermal bridging of conventional stick framing that can cause condensation, leading to hazardous mold, mildew, or rot.

3. Sustainability Credentials

SIPs are highly energy-efficient and therefore contribute positively to the environment by reducing CO2 levels. They also use significantly less energy during the manufacturing process compared to traditional construction methods and have lower embodied energy than traditional construction materials, such as steel, concrete, and masonry.

4. Faster Construction with Less Labor

SIP walls and roofs are designed and precisely manufactured offsite in the manufacturing facility. This allows the building to be assembled on-site quickly and made watertight in a matter of days. This reduces costs such as project management, scaffolding, framing labor, and much more. A BASF time-motion study confirmed that SIP panels reduce job site labor needs by 55%.

5. Design Flexibility

SIPs can be engineered and fabricated to suit any building design, allowing architects and owners the flexibility and creative freedom to develop aesthetically pleasing spaces.



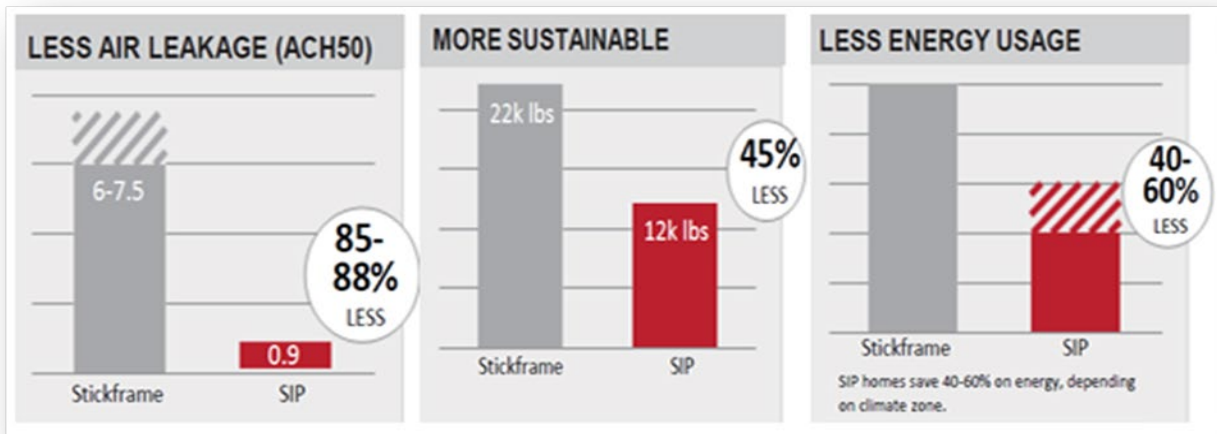
Health / Sustainability

- **Better Indoor Air Quality**

A SIP home or commercial building allows better control over indoor air quality because the airtight building envelope limits incoming air to controlled ventilation which filters out contaminants and allergens. The SIP envelope doesn't have the voids or thermal bridging of conventional stick framing that can cause condensation, leading to hazardous mold, mildew, or rot.

- **SIP Sustainability**

Structural insulated panels are one of the most environmentally responsible building systems available. A SIP building envelope provides continuous insulation, is extremely airtight, allows for better control over indoor air quality, reduces construction waste, and helps save natural resources. Life cycle analysis has shown that SIP homes have a tremendous positive environmental impact by reducing energy use and greenhouse gas emissions throughout the home's life cycle.

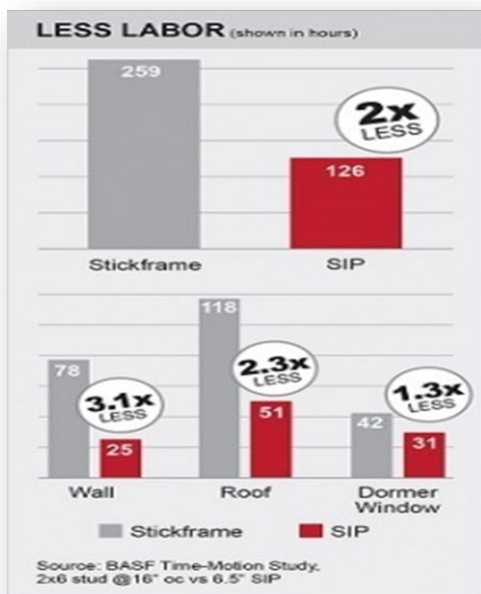




SIP Cost vs. Stick Frame???

SIPs CUT LABOR COSTS BY **55%**

A study conducted by the American Society of Civil Engineers (ASCE) shows that residential builders can reduce their framing labor needs by as much as 55 percent by using structural insulated panels (SIPs) instead of conventional “stick building” methods. Labor savings generally offset the increased raw material cost for structural insulated panels. Changing lumber prices, job site waste removal, callbacks, and ongoing energy costs are just some of the additional variables that must be considered.



HOW SIPs SAVE LABOR

- Entire wall/roof assembly installs quickly and easily in sections
- Openings and chases precut at factory
- No sheathing or insulating on site
- Uniform nailing surface for siding
- Fewer callbacks



Do Building Codes accept SIPs?

- SIP construction is recognized by the International Code Council body of building codes used by most jurisdictions in the U.S. SIPs are also approved by the State of Florida for High-Velocity Hurricane Zones (HVHZ).
- For residential buildings, specific construction practices for SIP wall systems are included in Section R610 of the 2018 International Residential Code. For applications beyond the scope of Section R610, the building inspector will typically require a licensed engineer or architect to approve the building plans before construction. An engineer's approval is always required in high wind areas, high seismic zones, and commercial buildings.





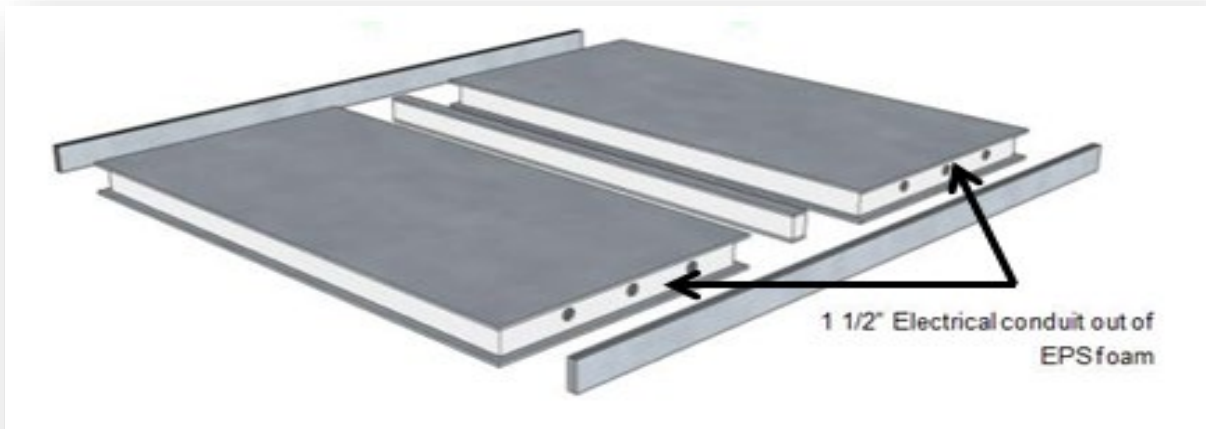
Electrical & Plumbing

- **How are electrical wiring and fixtures installed?**

Electrical wires are pulled through pre-cut channels inside the core of the panels called “chases.” Chases are added during the manufacturing process according to the electrical design of the home. Electricians can feed wires through panel chases without compressing the insulation or drilling through studs.

- **Can plumbing be installed in SIPs?**

Plumbing should not be located in exterior SIP walls because of the possibility of condensation or supply lines freezing in cold climates. During the design phase of the project, all plumbing should be relocated to interior walls. If plumbing must be located on an exterior wall, it is recommended that a surface chase be installed on the interior of the wall to conceal plumbing. Another option is to construct a small section of the wall using conventional wood framing that can be used to run plumbing. Plumbing penetrations such as drain-water vents (DWV) can be placed through SIPs if they are thoroughly sealed to prevent air infiltration





Additional Benefits from SIPs!

ADDED BENEFITS FOR BUILDING WITH SIPs

- Framing crews learn easily to install
- Onsite modifications simple if required
- Simplified electrical and HVAC installation
- Precise openings and joints speed door, window, cabinet installation

HAPPIER CUSTOMERS

- Lower energy costs
- Stronger, more disaster-resistant home
- Greener, more sustainable process
- Improved resale value
- Healthier, quieter, more comfortable living space