

BASF study shows building with SIPs reduces framing construction labor by 55 percent

FLORHAM PARK, NJ, February 13, 2008 – A new BASF study conducted by the RS Means unit of Reed Construction Data 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.

The study was conducted on a two-story, three bedroom, Cape style home in Tilton, New Hampshire. Engineers from RS Means observed the construction of the home and compared the workers’ productivity with a benchmark home built using 2×6 construction and fiberglass batt insulation.

The SIP installation crew spent 130 fewer hours framing the exterior walls and roof of the home by eliminating many time-consuming steps from the construction process.

Used for walls, roofs, floors, and foundations, a structural insulated panel (SIP) sandwiches a rigid foam insulating core between two structural skins usually made of wood. The seamless, closed-cell rigid foam core reduces air leakage and thermal bridging through the panels by providing a continuous span of insulation. In a large, single component, SIPs perform structural, insulating, and air sealing functions and install quickly saving builders time and money.

The Tilton home used energy-efficient SIPs for all exterior walls, the roof, and two window dormers. Complex and hard to insulate dormers are easily pre-assembled using SIPs and hoisted into place with a crane. Installation of the SIPs dormers was found to be 25 percent faster than the benchmark home.

By using precut channels, or “chases” in the foam core of the panels, electricians were able to wire the Tilton home with 11 percent fewer hours than its 2×6-framed counterpart, according to the study.

Building with SIPs also reduces waste since they arrive at the jobsite prefabricated and require less measuring, cutting and framing. The study noted a 93 percent material utilization rate that sharply reduces the cost of jobsite debris disposal.

SIPs create a well insulated and airtight building envelope and SIP-built homes repeatedly demonstrate annual energy savings of 50-60 percent when combined with other energy saving techniques. For example, SIP test homes monitored by the Department of Energy’s Oak Ridge National Laboratory (ORNL) show heating and cooling costs as low as 32 cents per day. Airtight construction also provides better indoor air quality for occupants.

Due to the airtight qualities of SIP construction, the EPA waived its blower door test requirements for any SIP homes qualifying for the Energy Star program, thereby reducing the cost of an Energy Star home inspection. Coupled with federal and state tax incentives available for energy efficient home construction, SIPs offer builders another money saving option.

“It is impossible to ignore the cost effectiveness of structural insulated panels in light of the Time and Motion study,” said Bill Wachtler, SIPA executive director. “The time, material and labor savings during construction and long term energy savings during operation are outstanding benefits available to anyone building with SIPs.”

BASF, who commissioned the study, supplies polyurethane and expandable polystyrene insulation, formaldehyde-free binders for oriented strand board skins and low-VOC adhesives and sealants and adhesives used in the manufacture of SIPs.

“By demonstrating the, time and labor savings possible using SIPs, we hope to encourage the construction of more durable, energy-efficient housing,” said Jack Armstrong, Leader BASF Construction Initiative. “We believe that this type of building will create less of an impact on the environment during its construction and operation.”

About BASF

BASF: The Chemical Company is the world's leading chemical company. Its portfolio ranges from chemicals, plastics, performance products, agricultural products and fine chemicals to crude oil and natural gas.