
SUBJECT: EXPOSURE TO EXCESSIVE TEMPERATURES

Premier SIPS are a structural engineered component, providing both insulation and structure. Premier SIPS are manufactured with Exposure I rated Oriented Strand Board (OSB) facings and an Expanded Polystyrene (EPS) rigid insulation core. The rigid insulation core provides the structural connection between the OSB facings and must be protected for the life of the structure from exposure to excessive heat that may damage the rigid insulation.

TEMPERATURE:

The maximum recommended use temperature for the rigid insulation core is 165°F (75°C). The temperature that the Premier SIPS are exposed to is a function of exterior temperature, building orientation relative to the sun, building elevation and the type of roof covering material(s) used. In most locations across the United States and with the use of standard roof covering material(s), the Premier SIPS core will not be exposed to temperatures over 165°F.

Peak temperatures typically occur under the following conditions: south facing, low or medium slope, and dark colored roofs. In these situations, roof surface temperatures have been documented to reach temperatures of 200°F or higher on sunny days in the southern U.S. Roof designs which include wall/roof intersections oriented toward the sun may also result in high roof temperatures. If the roof temperature is anticipated to exceed 175°F, a ventilated roofing system is recommended over Premier SIPS.

Metal roof systems have inherent properties that transfer and build heat that potentially could cause a Premier SIPS roof deck to exceed a safe use temperature. When installing metal roof systems over Premier SIPS, additional design considerations may be necessary to protect the roofing underlayment and the Premier SIPS from excessive temperatures. These design strategies may include the use of a ventilated air space above the Premier SIPS to minimize temperature exposure.

Another source of excessive temperature exposure to Premier SIPS roof and wall structures can be from reflective surfaces, such as windows having reflective coatings and reflective water features. In these situations, the rays of the sun are reflected off these features, resulting in concentrated heat energy being projected onto wall and roof surfaces. Again, if these temperatures exceed 165°F, the rigid insulation core damage may occur.

To prevent potential damage from reflective features, light colored reflective cladding materials should be selected for walls and roofs on areas of the SIP structure where concentrated reflective light will hit. An additional method to protect SIP walls from concentrated reflective light is to install a ventilated rain-screen cladding system over the SIPs. (See Premier Technical Bulletin #R-7 for information about “Ventilating Mats” that provide water management, ventilation, and heat reduction to SIP exterior surfaces.)

Consult your local Premier SIPS representative for specific recommendations for your geographical location and building design. In addition, temporary roof, wall, or floor coverings must be breathable to ensure that a Premier SIPS structure is not subjected to excessive temperatures. For example, the use of clear poly (not breathable) as a temporary roof covering may lead to a greenhouse effect that could damage the SIP structure.