



Foamular Metric XPS in Precast Applications

Foamular Metric XPS Insulation and HK low conductivity ties are specifically designed for use in site cast or recast insulated concrete sandwich panels.

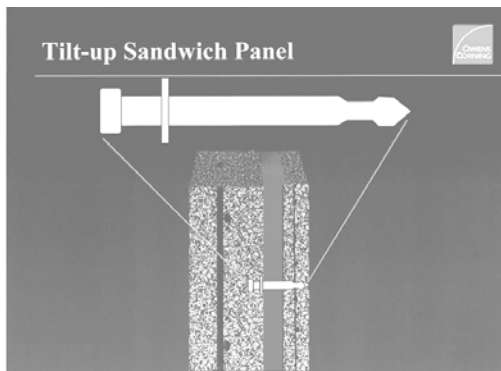
These products provide a fast, efficient cost effective method of improving the thermal performance of concrete buildings.

Typical concrete panels must be insulated after casting and erection. Using Foamular Insulation and

HK Ties, the panel is insulated during casting, prior to erection. Thus the insulation is integral to the wall.

The result is efficient and cost effective construction.

In addition, since the Foamular Insulation is "sandwiched" between two layers of concrete, the panel maintains hard durable concrete surfaces, both inside and out.



Thermal Performance of Insulated Panels

Concrete on its own has virtually no insulation value (1 mtr thick concrete = R0.8)

The following example indicates the 'R' Value of components of a sandwich panel using 50mm Foamular Metric XPS Insulation.

Item	
External Air Film	'R' 0.03
Fascia Whyte 50mm	'R' 0.04
Foamular Metric XPS 50mm	'R' 1.78
Structure Whyte 75mm	'R' 0.06
Internal Air Film	'R' 0.12
Total 'R' Value @ 24°C	'R' 2.03

It should be noted that 'R' Values increase as temperatures drop.

This example is a steady state 'R' Value calculation. In this type of construction an additional thermal performance benefit is thermal mass or mass wall effect.

Thermal mass benefits are attributable to the mass property of concrete and varying temperature differentials on one or both sides of the wall.



The Insulation – Foamular Metric Extruded Polystyrene Insulation

Foamular Metric XPS is a closed cell rigid insulation board with high compressive strength, and moisture resistance. This results in guaranteed long term thermal performance.

Compared to expanded polystyrene, Foamular Metric XPS has higher 'R' value per thickness (XPS 50mm = R1.78, EPS 50mm = R1.43) and superior water resistance. (moisture absorption reduces thermal values).

Foamular Metric XPS will not absorb moisture from the concrete thus ensuring thermal values are maintained.

Foamular Metric XPS is guaranteed to maintain its physical properties and minimum 90% thermal value for 20 years.

HK Connector Ties

HK Connector Ties are specifically designed for use in insulated concrete wall sandwich panels.

HK Ties - Low conductive thermoplastic resin pin.

Manufactured from a high performance, engineered thermoplastic resin, HK Ties feature high strength and low thermal conductivity.

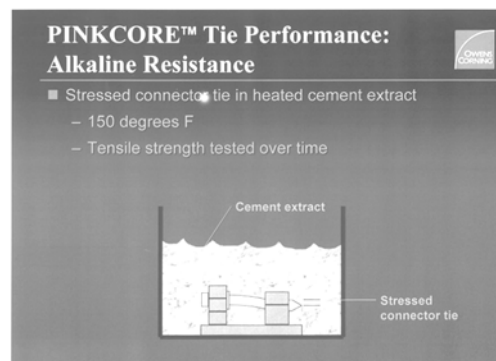
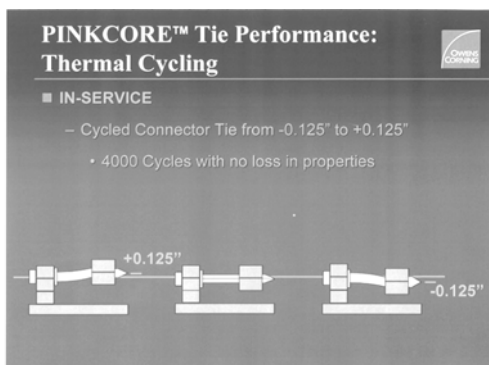
Unlike other sandwich panel designs which rely on metal or solid concrete connections, the use of HK Ties minimises the effect of thermal bridging and

results in a sandwich panel with maximum thermal performance.

The HK Ties are designed for quick and accurate installation.

The tensile strength of each HK Connector exceeds the 1100lb - 498kg minimum performance level, which provides a safety factor of 10: 1

Pullout test results confirm the HK Tie has a high safety factor of approximately 10 during stripping and lifting of panel.





Installation Instructions

Description

Foamular Extruded Polystyrene (XPS) rigid insulation and *ties are specifically designed for use in tilt-up, site cast and precast panels. Foamular XPS rigid insulation and ties provide a fast, efficient method of insulating walls without compromising the low-maintenance, high durability of concrete walls.

Each sheet of Foamular XPS insulation is marked on one side with dots on centres, indicating where ties would normally be inserted into foam.

The ties are designed to keep a 75mm fascia layer of concrete affixed to the panel without the benefit of solid sections of concrete.

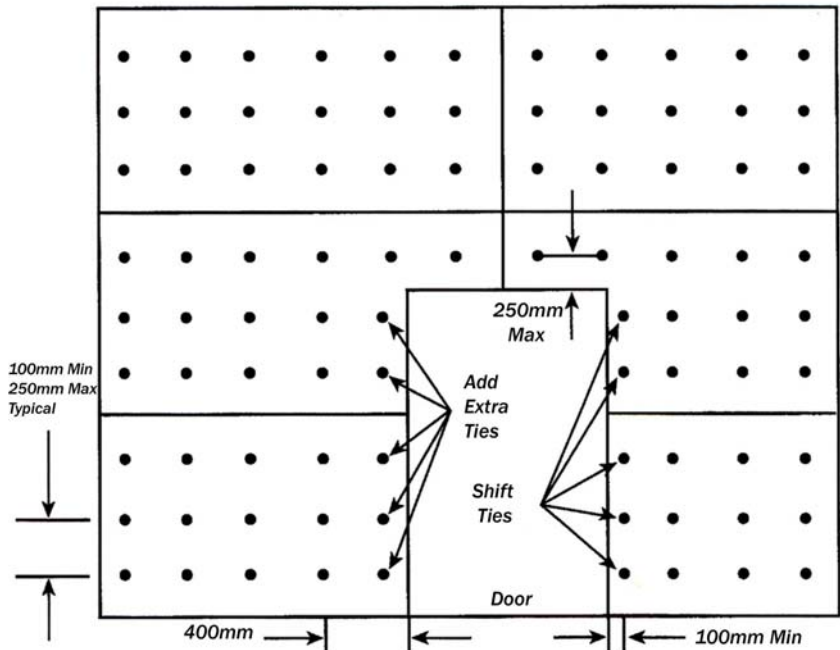
Applications

The Foamular Metric XPS foam insulation and ties may be used in most tilt-up and precast applications where;

- The fascia, or outside layer of concrete is three inches thick or less.
- The panels do not exceed beyond 12mtr above grade.
- The full thickness of the panel, including the fascia is supported.
- The concrete strength at the time of lifting is at least 2,500 psi (17.2 MPa)

Installation

- Place foam insulation board on freshly poured concrete immediately after screeding (within 15 to 30 minutes). The concrete should be level enough to contact the entire surface of the insulation board.
- Insert the ties immediately after placing the insulation board on the wet concrete. Push the pointed end of the tie through the insulation board into the fresh concrete until the embedment stop is even with the top surface of the insulation board. Do not push tie into foam board past



embedment stop. Place ties on 400mm centres.

- Promote consolidation of the concrete around the tip of the tie by applying repetitive foot pressure on the insulation ("walking" the board) near each tie, or otherwise vibrating the tie or the area around the tie.

Around Openings

Openings in the wall (eg. for windows) often interfere with the dot pattern printed on the foam. Ties should be no closer than 100mm and no further than 250mm from the edge of the foam. In these cases, you may need to either shift ties away from the openings or add extra ties so this spacing is maintained.

Top or Bottom of Wall

As a result of fabrication, the dots on the board may not reflect proper placement of the ties at the top or bottom of the

wall. If the foam has been cut in such a way that the top or bottom row of dots is either closer than 100mm or further than 250mm from the edge, you may need to shift ties away from the edge or add an extra row of ties to maintain proper spacing.

Between Openings

If the insulated wall has two or more openings, or an opening is too close to the panel edge, be sure that the space between them has a least two rows of ties. If necessary, modify the tie spacing so no row is closer than 100mm from the edge of the foam. Extra ties are shipped with each order to facilitate proper spacing. Moving or adding a row of ties is easy with Foamular Metric XPS insulation and ties since the sharp end of the tie will penetrate the foam wherever you need to place it.



Extruded Polystyrene Insulation
FOAMULAR[®]

Case Studies

Prison Project locks up savings – Federal Correction Institute, Herlong California.

\$120 million design built factory, 23 buildings, 312,000 square feet of extension site cast wall panels.

Stated project supervisor, Shaun Obigewitch.

“The real proof of quality for me was when we started picking our panels. We’re picking and carrying 100,000 pound panels – in some cases up to a ¼ mile with a crane. That’s major stress on the pins, that’s the real proof, and everything is holding together”.

Special care home has special walls – Sydney Home for Special Care, Sydney – Nova Scotia

Pinkcore insulated panels 2½ stories high, 85,000 square feet (7,900 square metres).

Project Manager – Donald MacDonald.

“Once the walls were up and the building almost fully enclosed you could feel the difference. The insulation in the external walls will definitely help. It could cut the number of heaters by 30 to 50 %”.

Note Information in this brochure is a overview of the Owens Corning Pink Core System tested and distributed through Owens Corning America.

In Australia Austech External Building Products Pty Ltd is the National Distributor for Owens Corning Foamular Metric Extruded Polystyrene Insulation.

The Pink Core Ties are distributed throughout Australia as HK Connector Ties available through Actech International (Melbourne and Brisbane).

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