Building for the future

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Ecohousing

Building Systems

PRODUCT INFORMATION

WALL PANEL SYSTEM

PRODUCT STATEMENT

Building for the future

About Us

Ecohousing Building Systems is committed to the development, manufacture and marketing of environmentally friendly products and methods. We are "building for the future", satisfying the need for a low cost, ecologically sound and totally insulated building solution that combines the strength of steel with the outstanding thermal qualities of polyurethane. Our products are classified as Structural Insulated Panels (SIPs). Their lightness, innate strength and load-bearing capabilities make them ideal for minimal-frame building methods, with consequent significant savings in construction time and costs. High thermal resistance ratings mean that Ecohousing homes easily meet the highest star energy efficiency requirements. The Ecohousing Building Systems are protected by world-wide patents.

The Ecohousing Wall Panel System Advantage

Wall Panel System

Ecohousing Building Systems has created a unique wall panel system. The wall panels are very strong and **lightweight.** The panels comprise of a high pressure injection bonding of **structural polyurethane PUR** between sheets of fibro-cement. The polyurethane core offers excellent sound absorption and exceptional fire resistance. Panels are available in lengths of 2.4m, 2.7m, 3.0m, 3.3m and 3.6m as well as thicknesses of 80mm or 104mm, they are 900mm wide. Cladding panels are available in 60 & 80 mm with R values of R 3.01 and R 4.02.

Key Features:

- High R rating; 80mm R 4.02. 104mm R 5.37 (double industry standards)
- **Energy Efficiency – Highest Star rating**
- No cavities, no gaps, no cold bridges, no thermal leaks
- **Indoor** and **outdoor** applications
- Weather resistant
- Totally reliable thermal and acoustic continuity and performance.
- **FIRE SAFE**

Engineering Specifications

The wall panels have been through exhaustive testing and are certified to meet the fatigue load requirements specified by Building Code of Australia Appendix, they also have the highest cyclone rating possible certified by James Cook University cyclone testing centre.

Axial Loads – Wall Panels

Panel Dimensions	Max Vert Compressive Load	Ultimate Design Load
2400x900x78mm *(Standard)*	98 kN	67 kN
2400x900x78mm *(Reinforced)*	120 kN	82 kN
2400x900x103mm *(Reinforced)*	240 kN	164 kN

Panel Weights

Size (mm)	2400	2700	3000	3300	3600
Weight (Kg)	45	50	56	61	67

Ecological

Ecohousing building systems care about the ecological future of our planet by focusing on:

- CO_2 Production Emission savings
- Vermin(Rodent), ant and termite safe without any poisonous chemicals
- Low embodied energy
- No building waste
- Steel/wood stick frame not needed in construction
- **Huge energy usage savings (cooling/heating)**

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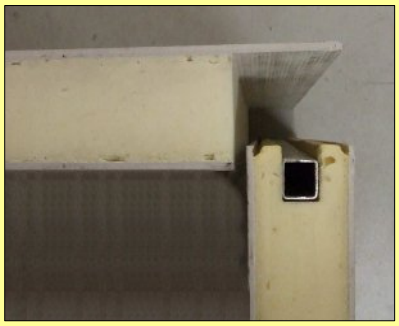
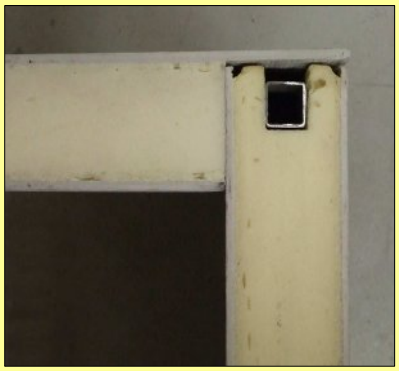
Fixing Method

Panels are fitted to a bottom locator and are simply slid into the adjacent panel using a steel SHS locator, which also encapsulates a threaded 12mm steel tie rod, (Cyclone rod) that passes through the bottom locator to be anchored to the foundation.

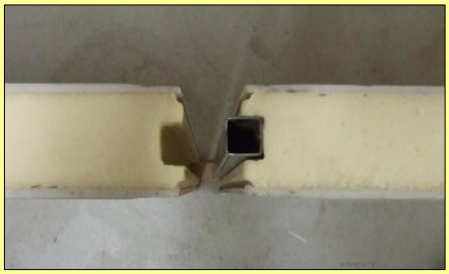
Adjacent panels are bonded along the vertical joints using a high strength construction adhesive. A steel channel top plate is then fitted and tied down to the foundation using the steel tie rods.

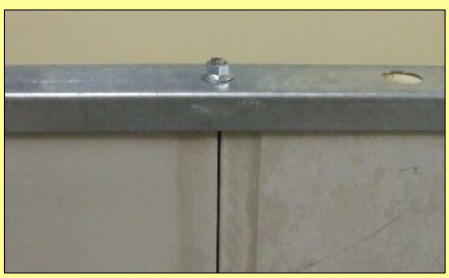




Widespread Uses

Ecohousing roofing panels can be used in a wide variety of different projects for both **residential** and **commercial** buildings**.** They are available for new housing or to upgrade existing buildings to new energy rating with wall cladding panels.





Wall Cladding Panels

Cladding panels are designed to meet the needs of the home owner/renovator and DIY market. Available in the same dimensions as the standard wall panels, cladding panels are 60mm thick with a high **R3.01** rating or 80mm thick giving a **R4.02** rating.

Existing energy deficient buildings are one of the main causes of global warming, producing billions of tons of carbon dioxide emissions yearly. Encapsulating and renovating asbestos cement houses has enormous potential for saving householders tens of thousands of dollars. There is no need to remove any existing coverings as the cladding panels simply fasten directly over the top, securing a health risk and upgrading to an exceptional energy rating. (See cladding brochure for further details).

Advantages of Structural Polyurethane Foam

Polyurethane structural foam has been in use for more than 50 years to manufacture building and refrigeration panels. It is inert and has a **closed cell homogenous structure** that is fire retarded with no oxygen to carry flames whilst retaining its insulation values throughout its life, it has been monitored for over 50 years without signs of deterioration. It is used in all domestic refrigerators where the freezer section is normally at minus 20ºC. The insulation section is much thicker in our wall roof & floor panels, giving exceptionally high insulation values.

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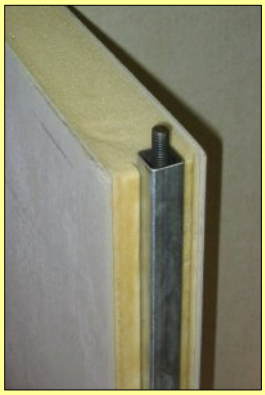
Bush Fire / Arson Safe

Using non-combustible fibre-cement & steel facing panels with fire retarded Polyurethane foam core, the panels do not ignite when subjected to fire. They are ideal for Buildings in Bushfire prone areas; fire uses enormous amounts of oxygen to feed the flames. The main entry of oxygen is through windows and doors, fire also needs and exit to suck in more oxygen to feed the flames, the natural exit is through the roof. As soon as the roof collapses the fire will be out of control, with Ecohousing Roof Panels the roof will not collapse in a Fire, neither will the wall panels. By fire proofing the windows and doors, you can be Bush Fire Safe. Public buildings can be safe from being burnt down through Arson attacks saving millions of dollars in Insurance payments if built with Ecohousing Wall, Roof & Floor Panels.

Ease of Build

The wall panel system has many features that make it very fast to install including:

- All walls are structural and load bearing
- Easy joining to adjacent panels
- Strong PU glue bonding between panels



For Further Details

Ecohousing Building Systems Pty Ltd
2/15 Page Street, KUNDA PARK QLD 4556
PO Box 803, MAROOCHYDORE QLD 4558
Phone: (07) 5456 2111
Mobile: 0418 712 978
Fax: (07) 5456 2666
Email: bqdesign@ecohousing.com
Web: www.ecohousing.com

⚠ WARNING ⚠

Polystyrene Sandwich Panel Fire Risk

Terminology should not be confused over the two major Sandwich Panel Manufacturing processes. One is injected **Polyurethane structural foam (PUR)** the process used by Ecohousing, the other is glued in place **Expanded Polystyrene foam (EPS)** termed **Polystyrene**.

Polystyrene sandwich panelling is an extremely fire hazardous material to use, especially as a sandwich panel, as the softening point of polystyrene is 100ºC and the melting point is only 180ºC. This is the temperature that you use when grilling a steak, a light bulb gets to 280ºC, pentane a key component of Polystyrene ignites at this temperature. In a fire once this temperature is reached the sandwich panel loses its integrity, collapsing allowing the pentane gas of the melting polystyrene to ignite. Flash over then occurs and sets fire to the rest of the polystyrene foam, travelling within the sandwich panel adding a huge fire load. Within minutes the entire building will be destroyed due to the collapsing roof and walls.

The risk of people being trapped and killed by the rapid spread of the fire with the napalm effect of molten polystyrene dripping from the sandwich panels is very real. In other countries prosecution which involved criminal chargers has resulted from non-disclosure of **EPS** product fire risks.

Insurance companies are now refusing to insure commercial buildings & cold rooms etc, manufactured with Polystyrene due to its fire hazard. Examples of this include the Tip Top Bread complex fire in 2002 causing $100million damages, the $8 million Detention centre fires in 2002, the Queensland Polystyrene Panel fire in a meat processing plant in 2001 causing an approximately $25 million in damages and the biggest fire in NZ the Poultry Abattoir in 2007 causing $NZ 50 million to $NZ 100 million dollars in damages.

*Customers should be warned of the dangers of **EPS** by the manufactures of the Polystyrene sandwich panels. Not notifying their customers of this risk could be deemed **reckless or even product disclosure negligence.***