Energy Efficiency

Fact: **90%** of the heat entering a structure comes through the roof in a hot climate. In cold climates most of the heat escapes through the roof.

The closed cell structure of polyurethane resists heat penetration in hot climates and prevents heat loss in cold climates, **significantly reducing energy usage** for heating or cooling.

Ease of Build

Roofing using Ecohousing roofing panels allows a project to be completed much faster and substantially easier then conventional roofing products this is because:

- Easy “click in” panel joining
- Use of standard fixing screws
- Use of standard gutters
- Incorporates a standard capping system
- No rafters or trusses

For Further Details

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⚠ 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.***

Building for the future

www.ecohousing.com

Ecohousing Building Systems

PRODUCT INFORMATION

ROOFING 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 Roof Panel System Advantage

Roof Panel System

Ecohousing Building Systems unique lightweight roof panels are available in **lengths up to 9 metres.** The panels comprise of a high pressure injection bonding of **structural polyurethane** between sheets of Smartspan® in Colorbond® or zincalume. The 108 mm roof panel system offers a thermal value of R4.53 bare and has achieved a permissible stress design load of 3.7kPa from James Cook University’s Structural Cyclone Testing Centre. They are complimented by standard cappings and standard gutter systems.

Key Features:

- Generous span capacity of up to **7 metres**
- Absolute structural consistency
- Insulation index R4.53 bare
- Available in all Colorbond® finishes
- Simple “Click-in” joining installation
- Combination of lightness and construction method means speedier project completion
- **FIRE SAFE**

Engineering Specifications

The roofing panels have undergone exhaustive testing & are certified to meet the fatigue load requirements specified by Building Code of Australia Appendix; it successfully resisted the NT fatigue load test for permissible stress design load of 3.7kPa. The roofing panels have been designed for an applied ultimate maximum wind load based on:

- Region C
- Terrain category = 2
- Ultimate wind speed (Vu) = 70m/s
- Maximum eave height = 6.0m
- Shielding multiplier = 1.0
- Topographic multiplier = 1.0
- External wall pressure coefficient = -0.65
- External roof pressure coefficient = -0.9
- Internal pressure coefficient = 0.7
- Local pressure coefficient = 1.5
- Roof ultimate limit state design pressure = 5.54 kPa at 3.6m
- Roof ultimate limit state design pressure = 1.99 kPa at 6m

Ecological

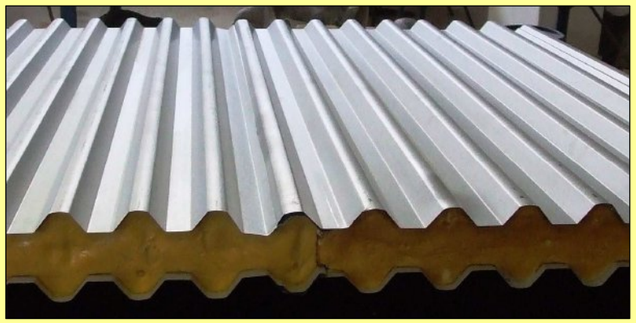
Ecohousing care about the ecological future of our planet by focusing on:

- CO_2 Production Emission savings
- Vermin (Rodent), ant and termite safe without any poisonous chemicals
- Low embodied energy
- No building waste
- No timber used in construction of roof
- Energy usage savings (cooling/heating)

Fixing Method

Roof Panels are joined together along the adjacent edges by way of the incorporated clip locking system. The female edge of one panel has a hollowed recess to allow the male edge of the adjacent panel to be overlapped on each face creating a full length mechanical join between the panels.

The panels are then pan-fixed in every pan at each end and along the length of parallel walls with 14g x 115mm ‘Stormfixx’ screws to an appropriately selected steel or timber support.



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 and roof panels, giving exceptionally high insulation values.

Widespread Uses

Ecohousing roofing panels can be used in a wide variety of different projects for both **commercial** and **residential.**

Commercial

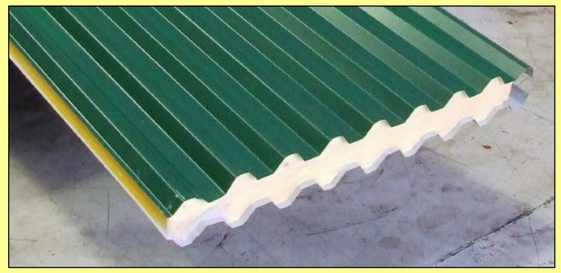
With roofing panel sizes up to 9 meters and a generous spanning capability of 7 meters panels are ideal for:

- Schools
- Community centres
- Churches
- Shopping centres
- Warehouses
- Packing sheds
- Livestock sheds

Residential

The Ecohousing roofing panels are available in different lengths; they are also available in different colours thanks to the Smartspan® in Colorbond® or zincalume. The panels allow for:

- Quicker build means the homeowner is in their house much faster
- Modern stylistic roofing
- Affordable ecological alternative



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