## ALL ABOUT PUR SIP PANELS



Your A-Z Guide

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# What is PUR?

PUR (Polyurethane) is a closed-cell foam core. This foam insulation is injected into each of our panels during manufacture.

When cured, the foam becomes chemically inert and will not outgas any harmful chemicals.

The PUR core is low VOC, zero ozone depletion and low Global Warming.

Due to the non-sagging, waterphobic and adhesive qualities of PUR SIPs, they perform at optimal levels for the life of the building.

In addition to boasting consistent long-term performance, lifecycle analysis has shown that SIP homes also have a tremendously positive environmental impact by reducing energy use and greenhouse emissions throughout the building's life.



High-density PUR is one of the best performing types of insulation for a given unit of thickness. When combined with the low levels of thermal bridging possible with SIPs, the insulation result is superior to most traditional construction systems.

Our PUR panels are manufactured right here in New Zealand, so not only is this beneficial to the economy but it also means no shipping delays.

## Let's talk about the boards

The boards that sandwich the PUR foam together are made of Oriented Strand Board (OSB).

The boards are nominally 12mm thick and these are bonded to the PUR.

The adhesive used to bond the OSB with the PUR is Phenol Formaldehyde (PF). PF is a thermosetting adhesive which produces a Type-A bond which is durable and permanent under conditions of full weather exposure, long term stress, and a combination of both. Formaldehyde based resins have been well proven and documented as an adhesive in the wood industry for over 70 years.

Unless otherwise specified, all framing timber used is a minimum structural grade SG 8 Radiata pine in accordance with NZ Building Code.

The timber framing is LVL, treated to meet the requirements of H1.2.



### SIPs vs Timber Homes

Our PUR SIPs (Polyurethane Structurally Insulated Panels) use a simple Camlock system to pull the panels together during the construction process. This method makes for a fast, easy install and ensures a solid bond between panels to create an airtight SIP building envelope.

Due to the airtightness of our innovative panel system, the house must be designed to manage adequate airflow and proper moisture control management to maximise energy savings, occupant comfort and building durability.

The continuous PUR insulation ensures that thermal bridging is kept to a minimum.



Because the PUR panels are custombuilt right here in New Zealand using specialist software, accuracy and tolerances are far superior to traditional construction.

The modular nature of the prefabricated panels means building to the weathertight stage is 60% quicker than traditional construction.

No on-site cutting is required, creating lower site safety risk and a cleaner, safer workspace. Not to mention better for the environment with less wastage!



## **R-Values**

R-values are the measure most commonly used to determine a material's ability to resist the transfer of heat.

The higher the "R value", the better thermal resistance the product will provide. This is one thing to consider when looking for the best insulation products or structural insulated panels for your home.

The R-value of our PUR panels shows the value of an average panel at manufacture, and the thermal performance over the intended lifetime of the product (typically at least 50 years) reduces to no less than 115mm R3.7, 165mm R6 and 215mm R8.

When comparing our PUR panels with our EPS panels, please ensure that the information you have also indicates the thermal performance over the intended lifetime of the product to enable a valid comparison.

| Size of total panel | Thickness | R Value | Width | Standard Lengths     |
|---------------------|-----------|---------|-------|----------------------|
| (mm)                |           |         | (mm)  | (mm)                 |
| 115                 | 93        | 4.5     | 1200  | OSB 2400, 2700, 3000 |
| 165                 | 143       | 7.0     | 1200  | OSB 2400, 2700, 3000 |
| 215                 | 193       | 9.4     | 1200  | OSB 2400, 2700, 3000 |



## FAQ's

#### 1 How long is the warranty on your panels?

Our PUR panels carry a 50 year warranty.

#### 2 Are your panels water resistant?

Yes, our panels are water-resistant but we do not recommend the use of them in spaces with high moisture and/or heat such as saunas, indoor pools and steam rooms.

Adequate waterproofing and vented windows, wall or ceiling mounted extract fans are a must for all wet areas, such as kitchens, bathrooms and laundries.

#### 3 Where are electrical services located?

Electrical services are located between the panel and the internal cladding. This allows conduit to be added for the electrician to pass cabling through.

#### 4 Are SIPS accepted by building authorities?

Yes, our SIPs are BRANZ certified and meet with all New Zealand council requirements under the 'alternative solution' category.

#### 5 Can recessed lights be used in SIPs?

Recessed lights should never be embedded in SIPs. Recessed lights can be fitted using an internal ceiling cavity. Many LED downlights are extremely low profile and will fit into a very small ceiling cavity.

#### 6 Can plumbing be installed in SIPs?

Plumbing should not be installed in exterior SIP walls because of the possibility of condensation or supply lines freezing in cold climates. During the design phase of the project, all plumbing should be relocated through interior walls and/or floors.

#### 7 Are SIPs susceptible to mould and mildew?

An airtight building envelope forms the basis of a successful mould control strategy. The extremely low levels of air infiltration in SIP buildings allow for incoming air to be provided in controlled amounts by ventilation systems. MVHR systems create an environment where mould physically cannot grow. In addition to creating a draught-free structure, SIPs are solid and free of any cavities in the wall where moisture can condense and cause unseen mould growth.

## 8 Can rodents and birds get into the SIP building structure?

An airtight SIP building envelope stops all vermin and pests from being able to enter into the building structure removing the issue of rats, mice and nesting birds within the wall or roof cavity of your home.

