

The key feature of the ARKit system is the advanced prefabricated panel used in all buildings.

PREFABRICATION

ARKit offers both SITE ASSEMBLED buildings (S Series) and fully constructed FACTORY ASSEMBLED buildings (F Series). Factory assembled buildings are restricted by road transportation sizes; whereas site assembled building components arrive to site in a container awaiting construction by a registered builder. Both building types utilise prefabricated elements.

PANEL DESIGN

ARKit wall panels consist of a multi-layered timber construction with 19mm Western Red Cedar (WRC) external cladding over timber framing members with fully insulated layers and air pockets which provide both thermal and weather barriers. The natural properties of the WRC provides resistance to moisture, decay and insect damage. WRC can be left untreated, and fades to a beautiful silvery grey. The internal wall lining of the panels are premium grade certified plywood with a clear hard wearing finish.

In the case of buildings to be located in extreme bush fire areas, an Australian native fire retardant timber can be used. This will satisfy building regulations and comply with AS3959 Construction of Buildings in Bush Fire Prone Areas. Other construction requirements may apply.

Cladding

The properties of Western Red Cedar can be summarised as;

- Sustainability: Western Red Cedar (WRC) used in all ARKit buildings is sourced from sustainable managed and harvested forests.

- Thermal Performance: "With its low density and high proportion of air spaces, Western Red Cedar is the best thermal insulator among the commonly available softwood species and is far superior to brick, concrete and steel." – WRCLA (Western Red Cedar Export Association)

- Longevity: Natural resistance to moisture, decay and insect damage due to WRC unique aroma from naturally occurring thujaplicins in its heartwood. These natural compounds are toxic to decay-causing fungi and preserve the wood to give it long lasting appeal.

The timber is acknowledged as 'very resistant to decay; and under Australian and New Zealand durability ratings is classified as Class 2 - alongside timbers such as Red Gum and Jarrah.

WRC possesses exceptionally high dimensional stability rating unequalled by any other timber in commercial use in Australia

- Colour: Varying in colour from white, buff and lighter tones through to salmons and rich reds through to chocolate browns.

Insulation

Insulation is a vital requirement for all residential buildings. ARKit provides 2 separate compartments within the wall panels with different insulation types, both with complimentary properties. A thermal bubble foil with air pockets (similar to bubble wrap) is used in conjunction with woollen wall batts to achieve an outstanding thermal barrier for all climates. This provides a combined thermal performance of approx. R2.2 for the walls, comparing favourably with a clay brick or concrete block timber framed house with standard R1.5 insulation.

The outer bubble foil insulation was chosen for the following reasons;

- Provides a vapour barrier, insulation barrier and radiant barrier - all in one
- Non-allergenic, non-irritant, non-carcinogenic, non-asthmatic and poses no health and safety risks.
- Anti-bacterial and anti-fungal - will not promote the growth of fungi or bacteria
- Provides a base R value of approx. R1.0

Woollen Insulation Batts, have the following advantages over manmade fibres;

- Its environmental, safe, effective, economical, quick and easy to install, and a genuine green product
- It won't slump or compress, and retains its R rating for the life of the building
- Provides a base R value of approx. R1.5

Internal Linings

The internal panel lining is premium grade plywood. The standard timber species is Hoop Pine (*Araucaria cunninghamii*), a native Australian species found in Queensland and New South Wales. The resource is 100% plantation grown and managed by the Queensland Government. The colour is generally whitish or light-coloured, the grain is straight and the texture is fine to very fine. Other sustainably harvested coloured timbers will be offered in the near future. The plywood wall linings are pre-finished in the factory and require no onsite treatment after installation.

Internal lining boards such as plasterboard can be utilised if required, although this does require extra tradespeople, time and cost.

External Protection

All external timbers are factory primed for initial protection during delivery and construction. Timbers are coated using quality water based products which are low in volatile organic compounds (VOC), which preserve the natural beauty of WRC, eventually fading to a silvery grey colour.

All quality external timber finishes rely on a tint or UV stabiliser in order to prevent the timber from fading as a result of continuous exposure to the sun's UV radiation.

We are currently investigating true clear timber finishes which utilise nanotechnology to provide high UV protection suitable for our harsh environmental conditions, without using VOCs, or affecting either the transparency of applied finish or the timber.

As with all timber houses the external protected timbers will need to be maintained.