

FACT  
SHEET

THERMAL

PERFORMANCE

## WINDOW FURNISHINGS

WHEN IT COMES TO THE THERMAL PERFORMANCE OF YOUR HOME, WINDOW TREATMENTS ARE PROBABLY ONE OF THE MOST NEGLECTED AND UNDERRATED PART OF THE BUILDING PROCESS. UP TO 40% OF HOME HEATING AND COOLING ENERGY IS LOST VIA THE WINDOWS.

### SOLAR PASSIVE DESIGN

Josh's House is based on well-established solar passive design principles to ensure maximum thermal comfort year round, with no air-conditioning or artificial heating required. These principles include:

- East-west orientation with maximum glazing to the north for winter solar gain (shaded in summer) and minimal glazing to the east and west to minimise summer heat entry.
- High thermal mass materials are used on the inside of the buildings to absorb winter solar gain and stabilise the internal temperature during summer.
- High insulation value to roof, ceiling and walls to minimise uncontrolled heat loss/gain.
- Living areas are located on northern side of the home.
- Room windows and doors strategically located for effective cross ventilation.

The Josh's House project has carefully considered window treatments including curtains, blinds and shutter that are specifically designed to complement these solar passive design principles, whilst also contributing to the functionality of the home by assisting with light control, glare management and privacy.



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## CURTAINS

In the winter months during the day, the curtains are opened up so that sunlight passes through the north facing windows to warm up the concrete floor and internal brick walls (thermal mass). At dusk the curtains are drawn closed to trap this internal heat to keep the living areas thermally comfortable.

In the summer, the orientation of the building, combined with window placement means that direct sunlight entry into the home is minimal, however there are periods during late spring and early autumn where some sun does enter, and this is where curtains (and blinds) assist to help block out unwanted heat gain.

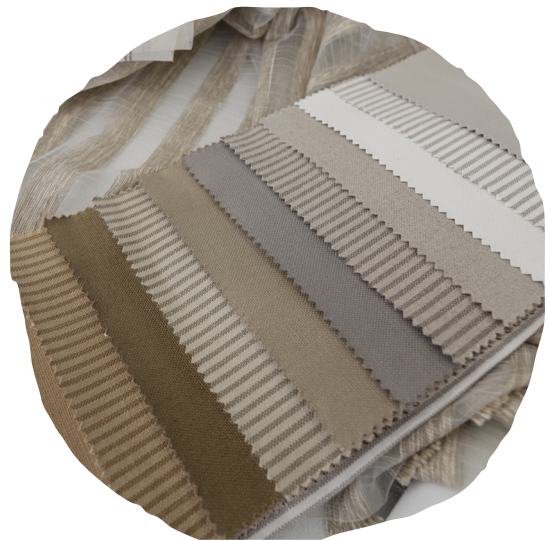
### Curtain Fabrics

The curtains were made using a block out weight curtain lining. The block out is achieved by coating a cotton, or polyester/cotton, basic base cloth with three layers of acrylic foam, two layers of off white and a layer of black in between to control the light. Acrylic was chosen as it has the highest resistance to UV. The coating is mechanically spread onto the fabric, smoothed, heat set and then treated with a stain resistant finish.

The face fabric used in Josh's House is 100% polyester for durability but has the look of linen to suit the more casual look of the home. The custom made curtain tracks were fitted into the ceiling with a small built in pelmet for maximum efficiency.

Josh's House is built on Healthy Homes (good indoor air quality) principles, so Australian and or New Zealand block out was used due to the stringent manufacturing standards, particularly in regard to the excessive use of chemicals during the manufacturing process.

In the master bedroom a sheer on a separate track was



also included for times when filtered light and daytime privacy is needed and external heat and cold is not an immediate issue. This also provides garden views and gives the bedroom a softer look and relaxed feel when required. The second track contains a block out lining with an extra layer of interlining cloth. This was included to allow maximum control over the transfer of temperature that may occur because of the gap between the two tracking systems.



The correct curtain lining not only protects your curtains from harmful UV, it also insulates and reduces noise level transference. These noise levels can be high in areas with sufficient hard surfaces i.e. concrete or tiled floors, granite benches, timber and furniture. Textiles in these areas absorb sound, reducing the overall echo in a space.

All of these factors were an important consideration for a house containing young (and occasionally noisy) children in a living space that includes a kitchen, a lounge and a kid's play area.

#### Curtain Fitting & Design

With the thermal performance being so integral to this project, the curtain fitting needed to be as accurate as possible. Curtains were neatly fitted to the ceiling, floor and side walls to reduce any amount of hot or cold air escaping.



#### **BLINDS**

Blinds were used in the main living area to give some daytime, or evening, privacy. It provides a feeling of security for a young family, even if the curtains are fully open.

Verosol silver screen blinds were chosen because of their 77% solar reflectance. They provide good heat and glare control, as well as 'view through' characteristics and the metallization reduces diffused transmission of solar radiation. The blinds are also antistatic so they repel dust.

The blinds are motorised for the safety and convenience of those with small children. They are affordable with minimal additional power usage. Ideally the blinds should be included as early as possible in the building process so can be fully integrated into home automation systems for maximum efficiency.





## A circular inset image showing a dining area with a wooden table, chairs, and a large window overlooking a patio with a blue roof and wooden slats.

## CHOOSING WINDOW FURNISHINGS

0' 10' 20' 30' 40' 50' 60' 70' 80' 90' 100'

Heat in the Thermal mass

Thick internal walls for increased thermal mass. During winter solar gain and ambient warmth to regulate internal temperature

Low-e coating to all external glass to regulate heat flow

Double-pane windows 28 degrees North of East

Minimize palmiers and curtains minimize heat loss in winter and heat gain in summer

Insulated reverse brick wall construction to exterior wall to reduce morning heat contribution to comfort

Sliding windows to maximize opening for ventilation

Double-pane Summer 28 degrees South of East

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When it comes to window treatments my suggestion is to work with a company that is able to offer all alternatives and is well versed in the latest ideas and technology.

Curtains add more to a home than just the practicality, insulation and money saving. If they are carefully chosen, professionally made and installed, they undoubtedly increase your property value.

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