Window selection for ACT and region

Everyone likes great views, natural sunlight and lots of fresh air, so understandably windows are one of the most popular features in homes today. On average, glazing can account for between 20% and 40% of the wall area of a typical Australian home. With so much glass being used, it is vital to choose the best type of glazing (preferably double glazing (DG)), and window treatments for any given location in your home.

Why are Window Design and Glazing Treatments so important in Canberra?

It is relatively easy to control heat gains and losses through walls and ceilings by adding insulation. Windows are harder. While glass is excellent at letting in the sun's light and warmth, it is a very poor insulator. A single glazed Aluminium framed window will lose heat *ten times faster* than a corresponding area of insulated wall. Modifying existing windows to minimize this heat flow can significantly improve your home's comfort and energy efficiency.

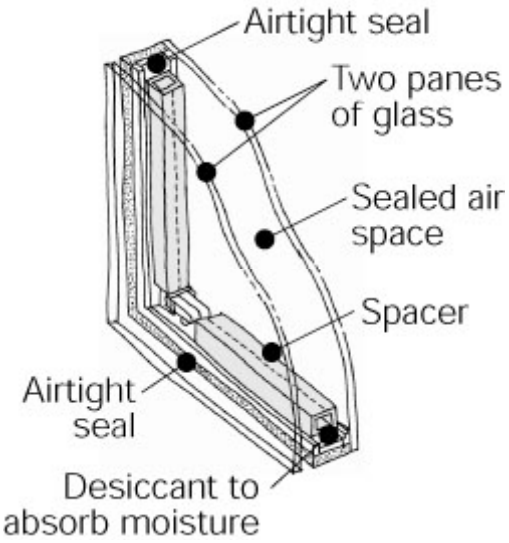
Choosing New Windows

Whether building a new home or retrofitting an existing residence, careful window selection, placement, (North is usually best!) and treatments will help provide year round comfort, as well as dramatic savings on your energy bills. To help you make an informed decision a Nationwide Window Energy Rating Scheme (WERS) is available, which rates the performance and suitability of using a window for a particular application. This labeling system should appear on all new windows and further information on WERS, is available by visiting www.wers.net

How Double Glazing works

Double-glazing works by reducing heat flowing through the window glass. A thin layer of air (usually 6-15mm) is trapped between the two sheets of glass.

The sealed air space makes it much more difficult for heat to be transferred through conduction. Standard double-glazing uses air between the glass sheets. Special gases such as argon may be used to further enhance the windows insulating properties.



Double glazed window frames are available in aluminum, wood or PVC. As standard aluminum frames are a good conductor of heat, they are inferior to either wood or PVC frames, which possess better insulating properties. A better option may involve purchasing aluminum units that have a special 'thermal break' built into the frame, which makes them comparable to either their wood or PVC counterparts.

Good news for existing homes too!

You can also enhance your existing single glazed windows thermal performance by:

- providing the correct shading or window treatment, suitable for both cooler and hotter months;
- fitting pelmets above existing curtains;
- installing well insulated floor to ceiling drapes or honeycomb blinds; or
- engaging a company who specialize in retrofitting single glazed windows, with an additional layer of

glass (in many cases removable), thereby providing some double glazing benefits.
- Using an after market product to double glaze yourself

Double Glazing: How much will it cost?

The domestic glazing market has developed to the point where most window companies now offer cost effective, highly efficient, quality double glazed windows. Typical standard aluminum framed double glazed windows, cost 60-100% more than single glazed windows. This may sound like a lot until you consider that:

Remember, Single glazing can be up to 10 times worse at insulating, when compared to the same area of standard wall material.

ALSO

Standard double-glazing is about 40-60% more efficient than single glazing.

AND

Double glazing alone saves around 60-90% of heat loss that is usually achieved by using heavy lined curtains and full pelmets. As quality curtains for an average home can cost upwards of $20,000, double-glazing allows savings through the use of cheaper curtains, for privacy or aesthetic requirements.

Unlike single glazing, double glazing can be used almost anywhere in the home to great effect and produces increased benefits like:

- reduced heat loss over Autumn and Winter and less heat gain in Spring or Summer – paying back to the owner every time there is a reduced energy bill;
- higher strength glazing and framing components, mean the windows last longer whilst also helping to protect against accidental breakage, criminal damage or forced entry;
- increased fire resistance (as opposed to single glazing which tends to shatter quickly when exposed to intense heat);
- dramatically reducing transmitted noise from outside;
- making it easier to meet government and local council energy efficiency compliance standards which are becoming increasingly common;
- improving the retail value of your home or making it more attractive as a rental property; and

There is no cheap alternative to double-glazing!

Some specialist glazing such as Pilkington Comfort Plus is marketed as having substantial improvements on standard single glazing. The costs of these products are still much higher than single glazing and despite claiming thermal improvements of around 33%, they may not be appropriate for a climate such as Canberra's because the tinting component of the product reduces the heat gain from windows in winter.

Window tints and special treatments:

Double-glazing will not keep heat or Ultra Violet (UV) out UNLESS it has been modified with a tint, reflective film or had 'Low E' applied to the exterior surface.

If you wish to stop heat gain from your windows, then reflective finishings and toned glass may be used to reduce unwanted heat gain. Low E glass may also be used to help reduce this problem. The drawback to this approach is that the tint is present at all times so that in the winter, you are robbed of the very pleasant winter warmth. As Canberra is primarily a heating climate, HEAT recommends using movable external shading where possible to reduce unwanted heat gain rather than tinted glass.

UV is a major contributor to the deterioration of most fabrics and furnishings and reflective finishings. Toned glass and a range of special glass types (i.e. A, B, Pilkington Comfort Plus etc.) can reduce these negative effects up to 99%.

Skylights or Roof Glazing:

Roof glazing also requires careful thought! Poorly planned skylights can result in 30% greater heat loss than wall windows, and can allow 50% more summer heat in than the worst placed windows in your house (i.e. West).

Roof glazing is best used for natural light as it emits up to three times the light of a vertical window (hence much smaller areas are required for lighting purposes than for wall windows). Openable skylights are also extremely useful in bathrooms, kitchens and laundries as they are great for natural ventilation as opposed to mechanical exhaust fans.

Skylights that are installed to maximize light, should always include adjustable shading devices (opaque glass as minimum), and be fully closeable.

Window Checklist:

- Use standard double-glazing as a minimum for all habitable areas. If you can't afford to fully DG, consider using it in primary living areas;
- Insist on asking for the WERS rating for any window you are considering.
- As a rule of thumb, keep total glass area between 20-30% of the total floor area.
- Provide adequate sized, adjustable shading for your glazing to maximize winter and summer performance.
- For **ALL** glazing - site most windows to the North, some East, and minimise Southerly and Westerly orientations if possible – if you can't do this, plan for the most appropriate shading and window treatment.
- Be careful in your selection of skylights – use for natural light and ventilation – and keep them small. It is always cheaper to run a low wattage compact fluorescent than to have a skylight. Cleaning and waterproofing can also be additional issues.

Curtains and Window Treatments

While this is a factsheet about windows, window treatments have been mentioned in passing on a number of occasions as they obviously complement good windows. They are a whole topic unto themselves, but we will point out here that it is very worthwhile to have the best windows *and* window treatments in a house. Adding a good window treatment to a wood framed double-glazed window will further reduce heat flows by 30%. For what makes an effective window treatment, see Tip 2, in the HEAT factsheet "Top Tips for Staying Warm".

Home ***E***nergy ***A***dvice ***T***eam

www.heat.net.au ph: 02 6260 6265 fax: 02 6260 6555 info@heat.net.au