

SELECTION : CLIMATE & FADING CONTROL

> RETURN TO SECTION MENU

11.3 FADING CONTROL 

Protecting valuable furnishings or artwork from the destructive fading effects of the sun has always been desirable to home and building owners.

**In order to completely prevent fading, furnishings would have to be in a temperature and humidity controlled environment where they received no contact with natural light.**

However, this is not practical, so by selecting an appropriate glass type becomes significant to reduce the rate at which fading will occur.

11.3.1 SOLAR RADIATION

In order to make the correct selection, it is helpful to understand the factors causing the fading. The sun radiates solar energy by electromagnetic waves over a range of wavelengths known as the Solar Spectrum. (290-2500 nanometres, where 1 nanometre = 1/1,000,000,000 of a metre).

The solar spectrum is divided into 3 bands, these are:

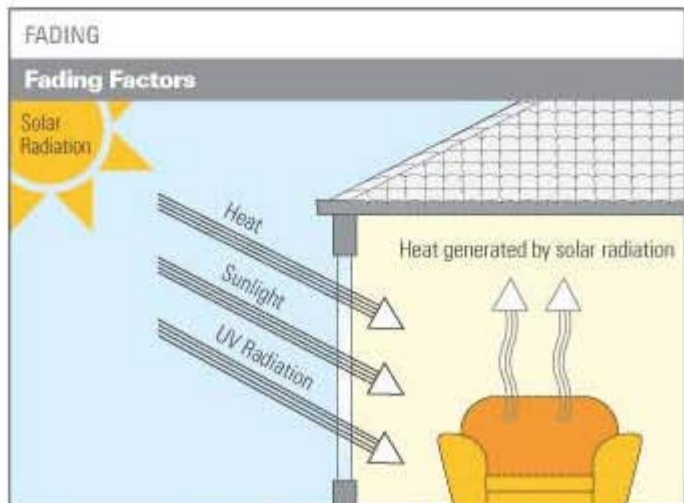
<b>Ultra violet light (UV)</b>	290 - 380 nanometres
<b>Visible light</b>	380 - 780 nanometres
<b>Infra-red radiation</b>	780 - 2500 nanometres

Ultra Violet is commonly divided into two bands, UVA and UVB. UVB is the short wavelength component (less than 315nm) and is the primary cause of sunburn and skin damage. Most glass types screen out the majority of the UVB.

UVA is from 315 to 380 (or 400nm) wavelength. The shorter the wavelength the higher the radiation energy, and this is why the UV light is the most damaging, and in particular short wavelength UV.

11.3.2 FADING

As solar radiation enters the room it is absorbed by the exposed furnishings or other material causing the temperature to rise. This continual heating of the fabric by the visible light and infra-red radiation, combined with the most damaging effects of the UV light rays, deteriorate and break down the structure of the furnishings, and other materials, eventually leading to the discolouration that is associated with fading.



Note: For glass fading performance data refer Section 12.

Research into furniture fading has indicated that the use of fading protection glasses can prolong fading up to 8.5 times longer than that of thin clear glass.

**Reducing the Damaging UV Rays**

**UV radiation is primarily responsible for the cause of fading, and the high UV radiation in New Zealand makes it more important to reduce UV transmission. Visible radiation (sunlight) and infrared radiation (heat) accelerate the fading process, but in New Zealand, conditions are expected to be of secondary importance.**

Glass can be used to reduce solar energy and thus reduce fading. The objective being to select a glass product that has very high absorption and/or reflection of UV radiation and controls the transmission of visible light and infra-red radiation.

The use of tinted and reflective solar control glass reduces the amount of UV, visible light and heat that pass through the glass, thus reducing the rate of fading. The use of laminated glass using PVB or special UV interlayers can absorb up to 99% of the damaging UV radiation and these can also be tinted to control light and heat transmission.

Alternatively tinted and reflective glasses can be combined with a PVB interlayer to control UV, visible light and heat transmission.

**Key Points on Fading**

- Furniture fading is caused by solar radiation.
- **UV light is the most damaging radiation.**
- Visible light and Infra-red heat are contributors.
- Glazing which absorbs or reflects solar radiation will help to reduce fading.
- **Fading can never be completely prevented.**
- Northern faces of buildings will receive greater exposure to solar radiation.
- Very large glazed areas will permit greater exposure to solar radiation.
- Glazing can be selected to significantly reduce the rate of fading.
- Laminated glass with PVB interlayer absorbs up to 99% of UV light.
- Tinted or reflective PVB laminated glass gives better fading reduction.
- Tinted or reflective glass will reduce solar heat and visible light and reduce fading.
- Drapes or curtains can help to reduce furniture exposure to damaging solar radiation.
- Building design (provision of eaves, shutters etc.) can help to reduce direct solar transmission onto glazing.
- **Fabrics and materials, fibres, dyes and pigments all perform differently under solar radiation exposure and may fade at different rates behind the same glass product.**