

# Tinted Windows

*This fact sheet is endorsed by the Australasian College of Dermatologists*

## Key messages and recommendations

Both episodic and cumulative exposure to UV radiation are associated with an increased risk of skin cancer. Clear or tinted films and window covers on the side and rear windows of vehicles can provide protection by substantially reducing the amount of solar ultraviolet (UV) radiation that is transmitted through glass.

Cancer Council Australia recommends that people who spend long periods of time in a vehicle use a combination of sun protection measures, such as a long-sleeved shirt with a collar, sunglasses and sunscreen that is SPF 30 or higher. This will ensure occupants are protected both in the vehicle and when they leave it.

The need for window tinting on car and building glass should be considered with regard to the risks to the occupants. In general, UV radiation through the untinted windows of buildings poses little health risk to people unless they are spending extended periods of time close to windows that receive direct sun or have a severe photosensitive skin disorder. Those who spend a lot of time in vehicles (e.g. for occupations such as driving) should consider using sun protection to prevent harmful exposure to UV.

## Definition of solar UV radiation

Solar UV radiation is divided into three types, based on wavelength: UVA (320–400 nm); UVB (290–320 nm); and UVC (200–290 nm). Solar UVC does not reach the earth's surface as it is absorbed or scattered in the atmosphere. UVA and UVB are of concern because of their potential to cause skin and eye damage. Both UVA and UVB are associated with the development of skin cancer.<sup>[1][2][3]</sup>

## Transmission of UV radiation through glass

All types of commercial and automobile glass block the majority of UVB, but the degree of UVA transmission depends on the type of glass.<sup>[4]</sup> While the thickness of glass does affect UV radiation transmission, the effect is limited compared with other factors.<sup>[5]</sup>

## Vehicle windscreens and side windows

UV radiation levels inside a car vary depending on factors such as whether the side windows are open or closed and the position of the vehicle in relation to the sun. UV radiation levels are generally much lower inside the vehicle than outside in full sunlight.

Laminated glass, used for windscreens, and tempered glass, usually used for side and rear windows, both block UVB radiation.<sup>[4][6]</sup> However, UVA transmission depends on the type of glass. Laminated windscreens, made from a tough plastic layer bonded between two panes of glass, provide better protection against UV radiation compared with tempered glass, blocking about 98% of UVA radiation.<sup>[6]</sup>

In comparison, tempered glass (which provides greater strength and reduces shattering, and is used for side and rear windows), allows the transmission of substantially more UVA radiation. However the amount transmitted can vary widely depending on the thickness and colour of the glass.<sup>[4]</sup> Estimates of UVA transmission through tempered glass range as high as 79%.<sup>[6]</sup>

Clear or tinted films can reduce the total amount of UV radiation penetrating the tempered glass by over 99%.<sup>[6]</sup> Tinting is recommended for work vehicles where practicable. The general public should also consider the sun protective benefits of window tinting for their vehicle. Alternatively, fabric side window covers can provide shade and UV protection. These measures are often found to be useful in providing extra UV protection for children and babies travelling in the vehicle. The amount of protection varies with different products. Tints and covers are only effective in providing protection against UV radiation when windows are closed.

Film and tint applied to car windows must meet state and territory regulations. All states and territories in Australia stipulate a maximum darkness, known as the visible light transmission level (VLT) for the windscreen, and side and rear windows. Windscreens are not to be tinted as the minimum requirement for VLT is 75%. However, a tinted band (not more than 10% of the windscreen area) is permitted providing it is above the portion of the windscreen swept by the wipers and it does not intrude into the primary vision areas of the windscreen.<sup>[7]</sup> **The Window Film Association of Australia and New Zealand** website has information on regulations.

## Building glass

UVA transmission through building glass is highly dependent on the type of glass. Laminated building glass reduces transmission of UVA completely, while tempered building glass and smooth annealed building glass can allow around 70% of UVA transmission.<sup>[5]</sup> Where windows are under deep eaves, verandas or awnings the transmission of UV radiation is reduced.

While tinting of windows in buildings can further reduce UV radiation transmission, the need for this should be weighed against the actual health risks to occupants. Generally, UV radiation through windows of buildings poses little risk to people unless they are spending extended periods of time close to a window that receives the direct sun or have a severe photosensitive skin disorder.

## Fact sheet details

This fact sheet was developed by Cancer Council Australia's National Skin Cancer Committee. It was endorsed by Cancer Council Australia's principal Public Health Committee and published in November 2017.

## References

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