

## **Additional Information From Dave Broadhurst, Meteorologist**

Thanks for your questions about the UV protection of auto glass and window tints. This question came up at both the UV Network conference and the *Shade for Good Health and a Green City* conference and so it is clearly on people's minds. I conducted a fairly extensive resource review of UV transmission through auto glass a couple of years ago and here are the basic findings with some additional information to address your questions about side and rear windows as well as tints.

### **1. Does the glass in cars provide UV protection? Does this apply to both the windshield, side and rear windows?**

The Cancer Council of Australia published a (draft) position statement on the UV protection offered by car windows as well as tints and coatings. The research that they reviewed showed that:

- Clear auto glass (side windows) blocks 97% of UVB radiation and about 37% of UVA radiation
  - Laminated windshields block all of the incoming UVB and about 80% of the UVA radiation.
- <http://www.cancer.org.au/documents/tinted%20windows.pdf>

These figures are consistent with the figures that I had found in the literature in the late 1990s, except that the recent Australian work pointed to higher UVA transmission for both windscreens and side windows.

I did not find anything specifically quantifying UV transmission through rear windows. In the few instances in which rear window transmission was mentioned, it was linked to side window transmission. This would seem to imply that side and rear windows have similar UV-reduction properties.

### **2. How much increased protection is offered by tinted windows?**

The Australian government has an excellent overview document that looks at the ultraviolet protection factors (UPFs) of a whole host of materials including tinted windows.

[http://www.arpansa.gov.au/is\\_upf.htm](http://www.arpansa.gov.au/is_upf.htm) UPFs are calculated based on the reduction of ultraviolet radiation across both the UVA and UVB ranges.

<https://www.varianinc.com/media/sci/apps/uv67.pdf> If a substance such as auto glass has a UPF of 20 means that UV passing through the glass is reduced to one-twentieth of its strength outside the car.

The main conclusion from this article and the Australian Position Statement is that car windows and windscreens provide excellent UVB protection and fair UVA protection. Window tints and clear films bump up a window's UV protection, with quality products increasing UVA protection to as much as 98%.

### **3. For how long have car windows protected us from the sun?**

The figures I had presented date back to the mid 1990s so decent UV protection has been offered for at least 10 years. If you were interested in the 1980s and earlier my "guesstimate" is that UV blocking by car side windows has probably remained fairly consistent over time because of glass' intrinsic ability to filter UV. The protection offered by windscreens would always have been more than side windows because the glass is thicker. However, at some point in their evolution the windscreens were laminated which substantially cut incoming UV down to the low levels listed above.

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