

Topic 7 Building Elements Blinds, façade, risk reduction

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Chair

Will pulling down canvas blinds over windows during a fire event help?

Justin Leonard

Yes, you're better off having them down than up, and one of the amazing accounts from Malcolm Gill, who I've showed an account of in that process, he actually had the forethought to ask that question before the Canberra Fires actually occurred. And his accounts on the day, was that the embers flew in, hit the canvas blinds, and, because of their incline, hit and simply rolled off. And when his fence burned up past his windows, those drawn canvas blinds offered significant radiant heat protection from that adjacent fence fire. And, although they charred very, very slightly so they discolored a little bit, they didn't burn in situ and provide an additional heat load to his windows.

And just a word of warning, they're the old school heavy-set canvas blinds, and the caution there would be that all blinds probably aren't created equal.

Chair

Is fire resistant canvas suitable to provide some protection over windows?

Justin Leonard

I've actually seen the really old school traditional roll-out canvas blinds that come out at a projected angle when they unroll. Reasonably resilient to ember attack, so they can get some spot burns in them but we don't really see them igniting and burning as a fire source on the windows. So, I would agree that those traditional canvas projected awnings, particularly the ones that either are vertical or at a quite a sharp incline angle, which actually helps to prevent the embers building up or lodging on them or any significant debris getting against them end up being quite a reasonable ember and debris shield, and offer quite significant radiant heat mitigation.

But, obviously there's some ultimate limit to where the canvas gets so hot because of the radiant heats on it that it will end up flashing and igniting. And then in that circumstance the canvas could offer some additional heat load to the window. But, it's a really a subjective question about all the benefit it's offered before it's actually flashed off and burnt, might in fact be more of a heat mitigation than the fairly rapid process of it burning in that ultimate exposure scenario.

Chair

Someone has asked: if they're caught at home on a high fire danger day, is it best to leave interior blinds up and does that make a difference?

Justin Leonard

It's very important to maintain complete awareness of what's happening outside. And that's to recognize when the fire's arrived past its peak and moved on. Because that really helps set the context of whether, if the house starts to burn, that you've recognized that the fire-front's passed and that at some point you might be able to move outside as the house becomes untenable. So that awareness is absolutely critical, so closing all the blinds and losing that awareness is definitely a negative.

There's not a lot of evidence in post-bushfire loss scenarios to suggest that the blinds inside the windows actually contribute to a reduction in the likelihood of things igniting inside. In fact, things don't tend to ignite inside the windows prior to the window, say, breaking. So, it really doesn't seem to offer any additional protection. External blinds and processes are potentially different.

Chair

Will 4mm cement sheet screwed to soft wood fascias help to prevent radiant heat igniting the timber? And if not, what treatment would you recommend for protecting exposed soft wood?

Justin Leonard

A 4mm AC sheet is non-combustible itself, but under a modest amount of radiant heat, say, something like 19kW/m^2 so BAL-19 and up is enough to heat up the thin AC sheet, and it will start to distort and curl at the edges. And of course, AC sheet's one of those typical sheeting that's put up and joined using a H-section join, and those joins are critical because quite often the go-to material is a PVC H-joining strip between the two sheets, which really does nothing to actually keep the sheets joined effectively, and prevent that lifting and peeling away and opening up of gaps between the sheets. So, the way to deal with that is to move to an overlapping join approach, where you actually use multiple layers of 4mm sheet, and then you start to get into quite a reasonable-performing system.

The softwood framing underneath the AC sheet is vulnerable when it reaches a temperature of approximately 180 degrees. It will char and smoke, and possibly start to burn in that cavity, if the AC sheet itself on the back face gets above that temperature. So, the question is how much heat is on it and for how long before that AC sheet actually gets to 180 degrees.

So, when you think about consequential fire sources, like a neighbouring house, or a retaining wall, or a motor vehicle, there's a high possibility that you can definitely get your facade to a fast moving fire that has a fairly good separation that briefly sees 19kW/m^2 possibly you won't get to that temperature.

Chair

Can you comment on the more recent use of rendered Blue Board in the urban fringe areas. What risks does that material pose?

Justin Leonard

I think the Blue Board itself can distort under the higher heat loads, but the real question is what is it rendered with? And some of the acrylic renders are technically reasonably combustible and reasonably thick in their application. But some of the cementitious and masonry renders are obviously quite benign. So, I wouldn't say the Blue Board itself is highly problematic, but the renders and the way the board's terminated to ground level, the way it's terminated to windows, and how the joints are overlapped or butted is where the potential weaknesses in that construction style can be. And, of course, it's all a question of how much actual heat load you get on it. If we're talking about flame contact from a fire front or very high radiant heat loads, up around 29kW/m^2

and 40kW/m^2 , you would start to be concerned about the way that's detailed and the actual dimensional stability of the Blue Board.

Chair

What's a 60/60/60 wall between a house, a shed, and is it useful?

Justin Leonard

A 60/60/60 is a number designation that describes a fire rating, and the 60 actually refers to 60 minutes. The three numbers involved in that designation deal with integrity, so one has to do with the whether the wall will collapse in 60 minutes, whether a hole will form through it in 60 minutes, or whether the back face of the wall will exceed the magic 160/180 degrees I was talking about for that softwood ignition within the 60 minutes. So, a 60/60/60 rate of wall won't fail in any of those three key ways, so therefore has a reasonable chance of surviving against an adjacent consequential fire source.

Now, you might be thinking that houses can burn for actually longer than an hour, and that's actually true. But, what's considered, or why those fire ratings are used in commercial premises, and in some cases in residential buildings, is that the fire brigade is certainly going to turn up and have a fair chance of putting that fire out during that time period. The challenge in a bushfire is: will that happen? So, it's worth considering that the 60/60/60 probably works in most circumstances but not all.

The other thing is, it doesn't rule out the fact that that wall could actually be combustible. So, one of the most interesting versions of a 60/60/60 wall is a thick log cabin wall. And it's fair enough because the log cabin will take more than 60 minutes to burn completely through those thick logs, but in a bushfire context, that wall will definitely burn down eventually, and whatever's behind it will be lost unless the fire agencies turn up. So, if you want to create a really adequate barrier, it should be non-combustible and 60/60/60, then you've got a fair chance.