

Sustainable windows fight fires



CertainTeed uPVC frames and double glazing restrict burning and seal out ember attack.

Marysville builder Rowan Steele has living proof that homes built to resist extremes of weather are also well able to resist ember attack. A house he built recently in Marysville was right in the heart of the February Black Saturday disaster.

In Rowan's words, "The worst fire in history hit this town but the house is still there. Even though it was totally surrounded by fire it survived intact."

Estimated Temperatures were well over 1000°C with winds of 150 kph.

Rowan spent two years researching the best materials for a low maintenance, low energy, ember resistant house. His research uncovered reports of houses that survived the Canberra suburbs firestorm of 2003. His conclusion: the firefront may be the immediate threat but ember attack is an equal, insidious danger, persisting after the flames have subsided. Rowan's solution would be to build airtight houses in fire restricting materials such as uPVC framed double glazing and PVC weatherboards, eaves and balustrades.

To quote a study by the ACT government's Home Energy Advice Team; "Housing designs that offer greater resistance to radiant heat and ember attack during bushfires also incorporate many energy efficient design principles. The real enemy is the embers that attack the house before and after the flame front hits. All gaps around doors, windows and eaves should be sealed to improve energy efficiency and reduce entry points for embers. Windows designed for improved thermal performance protect the house from heat transfer during a fire." (Visit www.heat.net.au)

Canberra Fire Research

Based on his research, Rowan designed and built the house that can now be seen standing starkly intact, as liveable as ever, one of the few buildings left in Marysville.

Similar houses in Kinglake, Flowerdale and Canberra all testify to the insulating strength and windproof seal of CertainTeed uPVC windows as part of an airtight, fully insulated structure.

Every aspect of Rowan Steele's building plan reflected his obsession with total insulation and airtight construction.

Insulation Obsession

"First I made sure this house was totally insulated - floor, walls and ceiling plus sarking under the roof to reflect radiant heat. This slowed the heating process long enough for the firefront to pass. Many houses exploded from radiant heat as the flames went through. But other houses withstood the fireball only to be overwhelmed by ember attack. Driven by scorching winds, the embers fizzed through any tiny gaps around windows, doors, eaves and bricks or weatherboards. Within moments, cosy interiors were scorching like a blacksmith's hearth.

That's why I made sure the Marysville house is air-sealed in every detail. We siliconed the building paper to the windows and used expander foam around the window frames before installing architraves. You must be thorough."



Top photo: uPVC rails, cladding and window frames resisted the flames. Timber would have ignited instantly.

This photo: Surrounded by destruction - but the house with CertainTeed uPVC windows stood firm.



Builder Rowan Steele at the Marysville house after the fire.

Golden Rules

- Total fireproofing is a myth. But you can build to gain priceless time for the firefront to pass.
- Be obsessive about insulating against radiant heat.
- Be obsessive about sealing against wind-blown embers and draughts.
- Insist on quality materials. Do your research. Ask for testimonials.
- Create the widest possible clearance between your house and flammable plants.
- Do it **ALL** right. Each fire restricting component depends on the others.



Looking out on the devastation at Kinglake through one of the CertainTeed double glazed windows which were essential to saving this house when fire hit.

Flashover Hazard

Rowan also explained why many houses virtually exploded. "The radiant heat gets so intense that combustible materials inside can ignite before the flames even get inside. This is called flashover, the cause of so much disintegration.

But an insulated, airtight house delays radiant heat and toxic gases, greatly improving your chances that you and your house will survive until the firefront passes. Windows are usually the weak point but in this case the double glazed CertainTeed windows set the seal. The proof is right there!"

Owners credit windows

One couple whose house survived the Canberra fires of 2003 wrote this about their CertainTeed uPVC windows.

"We are convinced that without the protection of the first sheet of the glazing and the flyscreen along with the composition of the frame, our house would have been destroyed. Wooden and steel frames and 3mm glass did not stand a chance in the heat and wind being generated at the time!"

CertainTeed managing director Ross

Wilson commented, "It's a favourable coincidence that a house well sealed against the weather is also slow to succumb to radiant heat and flying embers.

"Since 1985 we have been advising people on their total houseplan, so that they will get the most out of their double glazed windows. Prior to Black Saturday, I would have said our windows were a great help against fire. But now that I've seen these houses survive the awful fires, I'm prepared to claim that our windows made all the difference. They don't shatter easily like single glazing and their insulating power resists radiant heat. The uPVC frames restrict combustion. Just as importantly, our windows seal effectively, keeping out ember bearing winds as surely as winter draughts.

"Although we've been pushing sustainable building for decades and HEAT's papers have been on their web site for five years, it took this disaster to finally get everyone looking seriously at better ways of building."

Sustainable building seminars

To help with your building or renovating plans, CertainTeed hold regular seminars

on energy efficient/fire resistant building.

The seminars also cover topics such as solar orientation, eaves and verandah design, effective materials, insulation do's and don'ts, draught exclusion, building and glazing methods and traps to avoid.

"We cover everything from slab to ridgecap, because you must think of your house as a total, energy efficient, fire resistant system," Mr Wilson added.

Free Tickets, phone 1800 062 100.

Take advantage of CertainTeed's long experience - since 1985

To get the most out of your double glazed windows, you must get all of your building right.

So your CertainTeed investment includes an experience-based, practical assessment of your plans for the utmost in energy efficiency, climate control, fire resistance, peace and quiet in your home.

Draw on the wide experience of CertainTeed - manufacturers, installers and sustainable building advisers since 1985.

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Traditional in character - but the Marysville house proves that modern building materials and energy conservation principles resist both bushfire and climate change.

