Stop the smoke: a free guide from the team at Aerotight.

Hi everyone considering the amount of enquiries we are getting about how to reduce the bush fire smoke from getting inside peoples houses we wanted to help everyone out by listing a couple of things we can all do that are really simple and relatively cheap to implement.

The great thing about these tips is they work at making your house more efficient as well because you're going to reduce the amount of heated or cooled air leaking out of your house, so a double whammy of sorts.

A quick note - Building air leakage is uncontrolled air movement between the inside and outside of a building envelope. The concept is that by reducing the amount of holes in your building envelope you will reduce the ability for smoke to leak inside your home. In this guide some of the recommendations will be permanent and if you have any concerns about how this will affect your home in the long team please contact the Aerotight team on testing@aerotight.com.au. We will also be donating $100 for each home air leakage testing conducted to the RFS for the great work they are doing fighting the fires.

Location 1 - External doors

Bottom door seal

> If you don't have door seals on the bottom of your doors, swing past your local hardware and pick some up. There are lots of different types, some are easy to install and just stick on and other need a bit more of a handy man. Provided they seal the gap between the bottom of the door and the floor when the door is closed they are doing the job. From our testing, the brush seals are still quite effective at stopping air leakage compared to the ridged types, so if your floor is a little uneven go with these. If you have existing door seals try to get your eye down on the floor and have a look at how they are fitted. If you can see daylight, it's going to need some adjusting or be replaced.

Around the door frame

> A lot of doors will twist, bow or do not fit neatly against the door frame. Again, this fix is a really easy to do with a simple stick on door seal. This seal runs on the 3 edges of the door frame facing the door. They act as a buffer between the door and the door frame.
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> Depending on the gap will depend on the size of the seal you will need. The best way to check this is to close the door and stand on the outside. Make sure you latch the door closed so that you get the "real world" example of how the door will behave. When closed, work your way around and measure the gap using a playing card and a credit card. If you can't fit a playing card in around the door the seal is pretty good and either need nothing or a really thin or super squishy like a small foam seal. If it's more like a credit card or beyond (like your finger) I would look at the rubber seals. They cost a bit more but last longer and have a robustness that foam does not have.

Another option is to just tape over the door off. We use the cheap cloth from Bunnings because they are easy to tear and don't leave too much gum when removed. Noting that if you leave it on the for weeks this may be harder to get off.

One cavate is that by installing door seals you will change the dynamics of how your door shuts and will probably be harder to shut. If you can not shut the door the seal is too large, and you will need to start again with something smaller. If you have managed to shut your door and now cannot not open, push the door into the door jamb, squishing the seals and the door pressure will be taken off the door latch allowing you to open it.

Location 2 Windows

Windows are tricky because there are lots of different types, sizes and ages which directly impact how good they are at sealing. Generally, a window that closes with one side attached by a hinges and is pulled shut will seal better than one that slides because the sliding windows need to allow for movement past a fixed part of the window frame and the best way to do this with a couple of brush seals, which can't be super tight otherwise you won't be able to slide the sash. Also, sliding windows and doors will always have a gap at the top to allow for installation of the door/sash making them a little leakier as well.

Windows - Hinged

Awning – Hinge at the top and winder at the bottom

Casement - Hinge at the side like a door

Louvers – Multiple sections of glass the open a close like a blind

Tilt and Turn – Combination of Awning and Casement in the one unit

Sealing most hinged windows the process is similar to a door except there should already be a seal installed, so open the window and have a look. To see how well the seals work close the windows and try measure the gap, working your way around the windows. If it looks like the seal's cactus, you might have to call your local window company for some replacement seals. We always try to take a sample in so we can make sure we get the same one and its always a good idea ask lots of questions about how to install the seals. If you're not confident in doing this the window companies can probably do it for you of have a maintenance guy they use. If your window has no seals, then you can use the same method used for the door frames and use some stick on ones.

Windows - Sliding

Sliding door and windows – Horizontal sliding windows that go side to side

Single or double hung windows – Vertical sliding windows that go up and down

The sliding windows are a bit trickier because time does take its toll with all the rubbing from being used. First, we open the door/window and inspect the seals (if there are any). If the seals are in good condition they should look even and nice and plump, with the hairs in the brushes mostly running perpendicular to the frame they are fixed into. If they are worn or have been rubbing on one side, you should be able to tell because it will change in length from one end to the other, or you will have what looks like a seal but without any hairs left on it. Most of the aluminium windows will have a small groove the seals slide into. Timber

will often have a plastic groove rebated into the frame or something stuck on. If you can, grab the seal with a pair of plyers and try to slide it along the frame, don't try to pull it out. If the seal slides you should be able to work out where the open end is and slide it out. Sometimes with sliding doors and windows you will have to remove the window/door to be able to get to the seals. This is done by lifting the door up to the point where the bottom rail is higher than the bottom grove. After this the bottom should freely swing towards the centre of the room and once past the bottom grove if you lower the slider it will come free. Be careful because sometimes things can weigh more then you expect, so team lifting everyone.

Again, if you can't get it to work talk to your local window company and they should be able to help you out or you're not confident in doing this get a handyman/carpenter to do it for you.

Single and double hung windows, while they look great have to be the worst for air leakage in our experience. Inspecting the seals is normally the same the sliders so you just have to work your way around inspecting and replacing if needed.

If your sliding or double hung windows has not seals at all there are only a couple of things you can do to improve them. We shut the window/door and mark how far the door/window slides into the pocket. If you open it, you now know how far the sash slides into the pocket. If you measure this and compare it to the rebate you will have the distance of how far the sash slides sits of the inside edge of the pocket. If possible we try to install a seal where the sash slides into and presses against the frame. There is not much you can do with the sides of these because there is often not enough room for a seal and if you try it can jam everything up.

If for some reason your window has a permanent opening in it like a bathroom in an older house, this was a form of ventilation prior to bathroom fans. If you have a fan I would just tape over these with some plastic and tape. You will be amazed in wintertime how much this improves the temperature and helps reduce condensation.

If all else fails and you don't feel like you have fixed the problem enough and you're not expecting to use the window over the next couple of months you can always just tape over it completely with some plastic and tape. We do have some temporary sealing tap we use for air leakage testing, so if you're interested PM the team. It's easy to use and really fast to install.

Location 3 - Extraction fans

Extraction fans are normally in your bathroom, toilet and laundry ceilings or walls. If they don't have what is called a backdraft damper or draft stopper they are an unobstructed hole to the outside world. A backdraft damper is essentially a gravity or spring controlled flap that is pushed open when the fan is being used and closes when it is not, sealing the hole.

There are three ways to check if you have one installed. The first is to get up into the roof and have a look. If you can see the fans blades you don't have one; if you have a light fan combo and there is a big bucket looking thing sitting of the fan you probably have one. If there is some ductwork running off your fan the damper will either be right where the duct

is connected to the fan or cut into the ductwork somewhere, it will probably look like a section of tape about 100mm long.

The second way to check is to look up and if it's one of those standard round fans you can sometimes see the roof space above.

The third way to stand at the door and open and close it really fast. By doing this you are creating a pressure wave in the bathroom and the will force the flaps of the damper up, when you move the door the other way you should hear a little tap as the flaps be pulled down into the closed position. This method may not work that well if the damper is inline in the duct work but give it a go and see if you can hear anything.

If you don't have a damper there are a couple of options, but most importantly fans run of the lighting circuit which is 240v so we recommend talking to an electrician before doing any works.

If you have a ducted fan the damper can simply be cut into the duct and taped back up. Make sure you get the orientation around the right way!!!

If you have a standard round fan there are a couple of drafts stoppers out there that just sit over the fan and do a pretty good job.

If you have a light fan, in particular a heater bulb one like an IXL tastic the options you don't have many options but to replace it. If you just put a draft stopper over the top and forget to turn the lights off there is a potential for fire because most of the draft stoppers are made from plastic and plastic melts when close to a heater bulb. We do not recommend tyring to replace these yourself, get a licenced electrician.

An important thing to note is that the National Construction Code mandates that all extraction fans are to have a damper installed and be ducted to the outside, not into a roof cavity. If you are getting a new one, make sure you mention this to the installer.

Location 4 - Sealing and gapping

Gapping is the secret art of walking around and sealing every little nook and cranny you can find. All you need is a caulking gun some silicon or polyurethane, a bit of soapy water in a spray bottle and paddle pop stick. While it may be tedious the total amount of holes and gaps adds up to quite a large hole when combined. The best place to start is the external walls, don't worry about the internal walls unless you have a double brick house. Without actually doing an air leakage test its can be hard to work out what is leaky but here is a list of the most common spots we have found. There are heaps of YouTube videos on how to do it if you're unsure.

Around window architraves – Most of the time the painter will gap the sides where the window architraves sit against the plasterboard, but the top and bottom architrave are often missed.

Around external door architraves – This is the basically the same as the windows, check and seal.

Skirting boards – If you have an older house the skirting boards will often have a large gap between the floor and the bottom of the skirting.

Around joinery – In particular bathrooms will have holes bashed through the back of the plasterboard where nobody can see and if the joinery is not sitting flat against the wall there will be some leakage.

Also where the water and drain pipe run under the sinks will often have an oversized hole in the back of the joinery. These can be gapped or cover plates installed that you can buy from a local plumbing store.

Location 5 - Fireplaces

If you have an open fire place even with the baffle closed there is still a pretty substantial hole to the outside world. There are a couple of option available one being a chimney balloon, which is exactly what is sounds like. It a kind of balloon that you stick up the flue and blow up, sealing it off. Just make sure you put a large note in the tray so if anyone tries to light the fire the remove the balloon first.

Another easy way to seal this is to cut a piece of cardboard or plastic and tape it to the opening of the fireplace. If there are any other vent holes you will need to cover these are well. Also some of the glues in the tape can have a residual when they have been on for a while

Location 6 - Evaporative coolers

Most evaporative coolers should have a damper installed above the fan although some of the older ones don't, meaning you could have a bunch of holes throughout your ceiling. We don't know about any retrofit dampers for the older units, but you can buy some magnetic covers for the vents in the ceiling. They are easy to install with double sided tape and once installed are super easy to pull on and off. These covers are also great for winter because 99% of your warm air will try run up the ductwork just like a chimney and this will save you at least $100 on heating each year.

If you don't want go buy any cover plates you can simply tape over the vents or cover the unit up on the roof. But keep in mind that when the smoke goes away and it's super hot outside you're going to want to turn your evap back on and pulling a heap of tape off or jumping up on the roof takes a bit more time than just pulling of some magnetic cover plates.

And that's it for our first report. We hope you get some useful tips on keeping the smoke out. We are going to keep working on this document so keep checking in for updates. If you have any questions, need some more advice or want to book in a test, PM us on our Facebook page or email testing@aerotight.com.au.

Stay safe

Aerotight Team

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