



## Improving the flood resistance of your home

### Advice sheet 5: Flood-resilient windows and doors

This sheet provides guidance on inspecting the joints between doors (including patio doors) and windows and reducing the flow of floodwater through them.

***Important note:***

*Where floodwater may come into direct contact with glass (for example on patio doors or glass panelled doors) a robust flood board MUST be used to protect the glass from the water pressure. In these instances the following measures for improving the flood resistance of doors and windows MUST be used in conjunction with a flood board and NOT solely on their own. See Advice sheet 1 for further information on flood boards.*

#### Inspecting your doors and window

Gaps and cracks are often found around closed doors and windows, particularly in the joint between the frame and the wall. This is a major pathway for water to leak into your house. The following should all be inspected:

- external windows and doors
- patio doors
- connecting doors to garage or conservatory

To identify potential routes for the floodwater to enter you will need to inspect the frame of all your doors and windows, checking if the sealant is present and that it is well bonded to both surfaces. You need check for vertical gaps between the frame and wall and horizontal gaps at the base of the frame and around the door or window cill.

Techniques for checking the seals include:

- You may be able to see gaps or where the sealant is not properly bonded.
- In darkness you can shine a torch into the joint and viewing from the opposite side. Any light visible in the joint may indicate it is not properly sealed.
- You can also check if the frame is airtight by watching the flame\* of a match or candle or a feather passed slowly along the internal wall at the joint. Any movement can indicate movement of air through the joint, meaning water will also be able to pass through.
- The most thorough test of a door or window frame's seal is to actually expose it to water under control. You can do this by making a temporary dam from sand bags against the outside of the frame. This should be made to the expected height of floodwater and then filled with fresh water. You must be prepared for some water leaking into your home. This will allow you to witness which areas of the frame are not adequately sealed. Before any further sealing you must ensure that the area is thoroughly dried out.

*(\*Safety note: when using a naked flame to check for gaps ensure there are no combustible items, e.g. curtains or blinds, near the flame. Do not use a more powerful flame from a lighter or gas jet.)*

In addition to checking the seals you should also consider the material your doors and windows and their associated frames are made from, as this can affect the seal against floodwater. For example, a unit made from UPVC is more likely to have a better seal and will be more impermeable to floodwater than one made from timber.

## **What you can do to frames and joints to improve their flood resistance**

### *Fill gaps*

Wide or deep gaps should first be filled or packed, for example with expanding foam or gun-applied sealant capable of filling the required cavity. The outer part of the gap should be sealed at the outside face and the inside face with a sealant suitable for the size of gap, type of surfaces and expected movement.

### *Seal existing external frames*

For sealing of existing external frames, you should select a sealant that can be applied to the frame and its finish (e.g. varnished, stained, painted or UPVC).

### *Windows and doors*

The sealant should be continuous and unbroken between the frame and the wall on both vertical edges of the frame and beneath the whole length of the cill.

### *Replace seals around opening parts of doors and windows*

You will also need to rely on the existing seals, if any, around the opening parts of all your doors and windows. These can be replaced, but you should consult the manufacturer of the doors and windows. Check if there are any other holes in your doors below the expected flood level, such as keyholes, letterboxes and cat flaps.

### *Treat wooden frames and doors*

Water can leak through wooden frames and doors. This can lead to warping and opening of gaps in the future. Both external and internal surfaces of exposed wood should be treated and sealed with oil-based or waterproof stains, paint or varnish.

## **Use and types of sealant**

Some sealants will bond directly to different types of surface without the need for a primer. However, the gap should be free from dust and loose material and be prepared as described by the sealant manufacturer. The sealant should be applied so that it makes a substantial and continuous bridge from one side of the gap to the other. If this is not possible, the sealant should make continuous contact with surfaces either side of the gap, for example between the face of the frame and the face of the wall.

External sealants around doors and windows need to be able to accommodate some movement as the frame warms up and cools down. Internal sealants need to accommodate much less of this thermal movement, but may need to be suitable for painting over.

There are many different varieties of sealant available from builder's merchants and DIY stores. You need to select a material that will fill the maximum and minimum size of gaps. Sealants can be gun applied and/or worked into narrow gaps using an appropriate tool, and can be used to fill gaps up to 50mm wide or less than 1mm wide. For narrow gaps of less than 2mm, it may be easier to use a liquid penetrating sealant or a surface sealant to bridge the gap at the surface. Common types of sealant include:

- silicone – for accommodating high movement, good for frames
- water based acrylic – for internal, low movement situations
- oil-based mastic – for perimeter seals to timber frames
- polysulphide – for heavy duty applications
- epoxy – for areas with low movement
- polyurethane – for general purpose sealing
- butyl – strips for compression seals

#### **Other products for limiting seepage**

You can use flood boards and other removable flood protection products to prevent water from reaching the door or window and its frame. Moveable flood barriers can be very effective in preventing or reducing the volume of water entering through doors, windows and airbricks. These are not permanent features and must be properly fitted before floodwaters arrive. It should be noted that flood protection products will only be effective when they are installed and maintained in accordance with the manufacturer's instructions.

#### **Further advice on food protection products:**

The Environment Agency's Floodline can advise on flood products available and have produced a leaflet on using flood protection products. Visit [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk) or contact the Floodline on 0845 988 1188. The Flood Protection Association can also advise on flood products. Visit [www.floodprotetcionassociation.org](http://www.floodprotetcionassociation.org) or contact on 01773 881067.