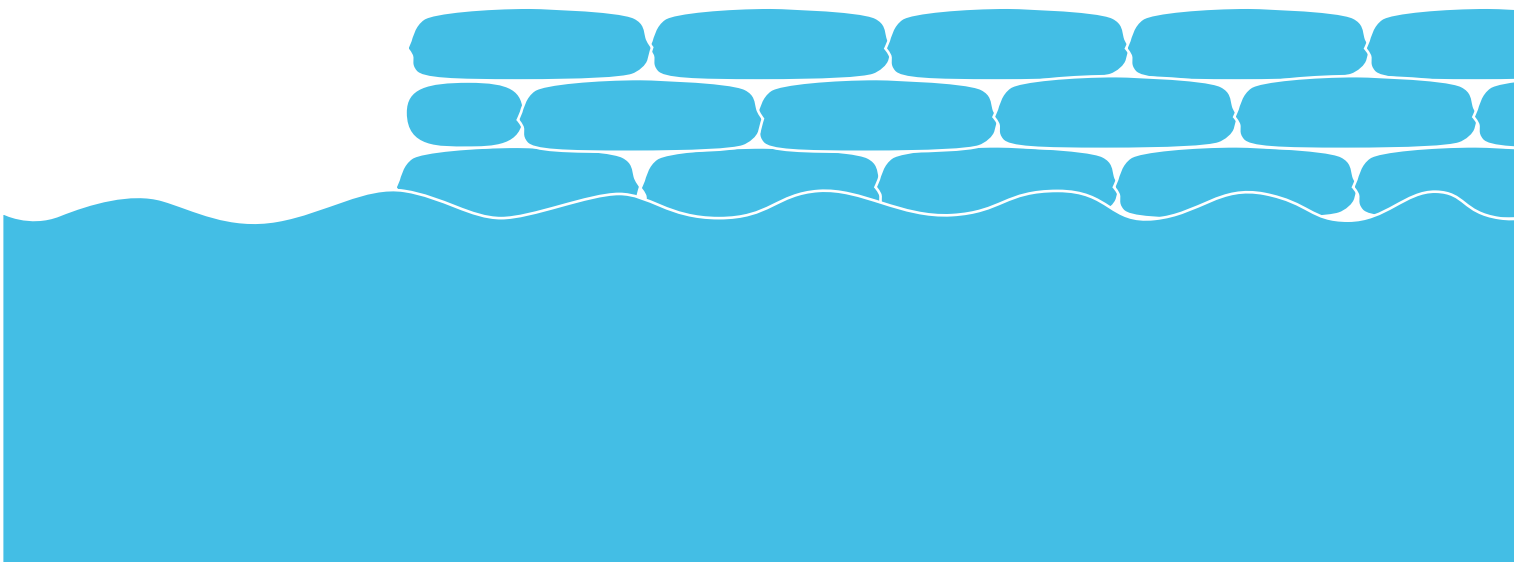


Sandbags

and how to use them
properly for flood protection



We are the Environment Agency. It's our job to look after your environment and make it a **better place** – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

Published by:
Environment Agency
Rio House
Waterside Drive, Aztec West
Almondsbury, Bristol BS32 4UD
Tel: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

© Environment Agency

All rights reserved. This document may be reproduced with prior permission of the Environment Agency.
March 2009

Do sandbags work?

Traditionally, sandbags have been used to block doorways, drains and other openings into properties as well as to weigh-down manhole covers, garden furniture and to block sink, toilet and bath drains to prevent water backing up.

- They can keep water out for short periods which can be improved by using them in conjunction with plastic sheeting.
- They can filter out some muddy sediments found in flood waters.
- They are cheap and easy to obtain.

However, sandbags are relatively ineffective when compared to purpose-designed flood protection products.

Some of the pitfalls are:

- It takes two people to fill them (unless you have a sandbag filling machine).
- They take time to fill (approximately one hour to fill 12 sandbags).
- They can be difficult to handle.
- Laying them can be very time-consuming.
- Sacking material is biodegradable and will perish if left in place for a long time.
- It is difficult to place sandbags in water and particularly in running water.
- Sandbags do seep water even when well-stacked and trodden into place.

As a result, we strongly encourage people to use purpose made flood protection products, such as flood boards, non-return valves for plumbing and air brick covers.

How to obtain sandbags

Don't assume that the authorities will provide you with sandbags in a flood emergency!

It is the responsibility of property owners to take appropriate action to protect their property from flooding.

Your local council may have some sandbags ready to deploy at times of flooding, but their priority is to protect the public at large. You should check with your own local authority *in advance* to find out what their policy is and how you can get access to sandbags before flooding starts. There may be a charge for this service.

Remember, during a flood crisis there may be limited stocks per person or supply routes may get blocked.

If your local authority doesn't supply sandbags, you can buy unfilled sandbags and a supply of sand from most DIY stores and Builders Merchants, but remember that if there is a flood expected in your area demand may exceed supply as people rush to buy them.

In an emergency you can use alternatives such as pillow cases or refuse sacks and fill them with garden soil.

Important Health and Safety Considerations

Filling sandbags and building a wall is a physically demanding activity so it is important that all those involved are fit enough to carry out the work.

Remember that they can get heavy quickly, so do not overfill, or fill them too far away from where you want to position them.

A **tall** sandbag wall must be designed by engineers to withstand the water pressures, as failure or collapse of the structure could pose a danger to anyone nearby.

It is essential the everyone involved in building a sandbag wall is equipped with appropriate personal protective equipment, including gloves and steel toecap footwear. If the sand is dry, eye protection in the form of safety glasses is also required.

If emptied and dried the sacks can be filled again, otherwise they will rot after a period of time if damp. If sandbags are contaminated by flood water, advice should be sought from your local authority environmental health department regarding their safe disposal.

Protecting your property

Sandbags are of no use if your property is already flooded – concentrate your efforts on protecting yourself, your belongings and moving precious items out of harms way!

Consider all entry points that water could get through, not just doorways, such as – airbricks, utility service points, cable entry points. Use other solutions for entry points where sandbags won't work (such as silicone sealant).

You'll need at least 6 sandbags to keep out 20cm depth of water for a standard door opening. Each sandbag will need approximately 15kg of sand. You should use sharp, not soft, sand.

**Figure 1: Sandbag wall across doorway
(viewed from water side)**

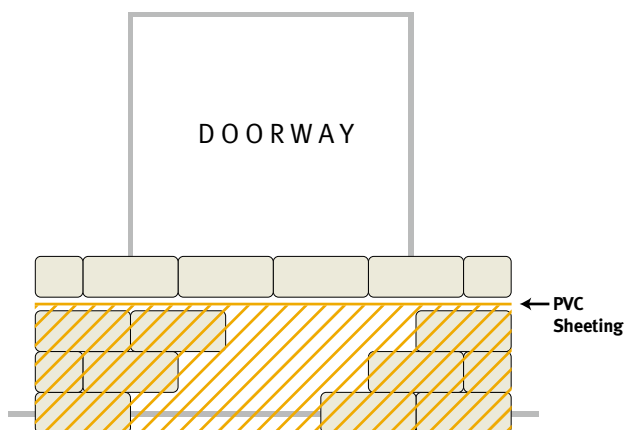


Figure 2: Header course (viewed from above)

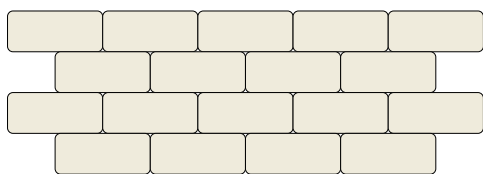
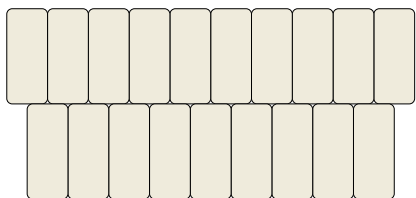


Figure 3: Stretcher course (viewed from above)



Filling the bags

- This is a two-person job: one to hold the bag open and one to fill.
- Do not fill bags more than half full.
- You don't need to tie the end of the bag.

Placing the bags

- Clear any debris from the area where the bags are to be placed.
- If you can, put a large sheet of heavy-duty plastic between the sandbags and the wall of your house.
- Place the bags lengthways, tucking the open end under the filled half of the bag and position it pointing into the direction of water flow.
- Place bags in layers. Like a brick wall, make sure that in the next layer each bag overlaps the one below by half.
- Stamp bags firmly into place to eliminate gaps and create a tight seal.
- To lay sandbags in a doorway (Figure 1), it may be necessary to empty some of the contents out or shape the sandbags to achieve a good fit without overlapping.

Building a more substantial sandbag wall

Building a sandbag wall up to 60cm high by 1 metre in length requires approximately 80 filled sandbags.

- Remove any debris from the area where the bags are to be placed and try to use firm and level ground if possible.
- There are two ways of laying sandbags – Headers (Figure 2) and Stretchers (Figure 3). Headers should be used on first, third and fifth courses. Stretchers are used on second, fourth and sixth courses.
- Lay sandbags with seams and bag mouths facing inwards, as this is where moisture enters the bags.
- Shape the sandbags into rectangles before laying them.
- Use half-filled sandbags to enable you to stagger joints.
- Have the neck of the sandbags facing the same direction.
- If the wall or dam is going to be in place over a long period of time PVC sheeting should be used to form a barrier on the wet side of the wall. Position the PVC sheet so that the leading edge falls

approximately on the centre line of where you intend to build the wall with the spare sheet showing at the front side (water side) – see Figure 4.

- If time and conditions permit, sandbags should be compacted after being laid, possibly using a vibrating plate.
- When desired height of sandbag wall is reached, pull up the PVC sheet over the top of the wall and fix in place with a final course of sandbags.

Pyramid placement method

If you need to create sandbag protection that is more than three layers high you will need to build in a pyramid style. For the structure to be stable, you should build the ‘sandbag wall’ three times as wide as you need it to be high. Again use the alternative Header and Stretcher method for alternative layers. Compact each bag into place and tuck the loose end firmly under the filled portion of the bag (Figure 5).

Additional waterproofing

Lay plastic sheeting across the side of the sandbag wall on the water side. Weigh down with additional sandbags (Figure 6).

Remember!

Sandbags are popular but they have disadvantages:

- **During an emergency sufficient quantities may be difficult to obtain.**
- **They are time-consuming and require two people to fill.**
- **They can be difficult to handle, particularly for the elderly or infirm.**
- **When they come into contact with floodwater they tend to retain contaminants such as sewage.**
- **Sacking material is biodegradable, and will disintegrate if left in place for long periods of time.**

More information on protecting yourself from flooding can be found on the Environment Agency website:

www.environment-agency.gov.uk

In certain circumstances, local authority grants may also be made available to cover some of the costs of providing resistance and resilience products for individual private dwellings. Contact your local authority to find out whether you may be eligible.

Figure 4: Polythene sheet in place (viewed from above)

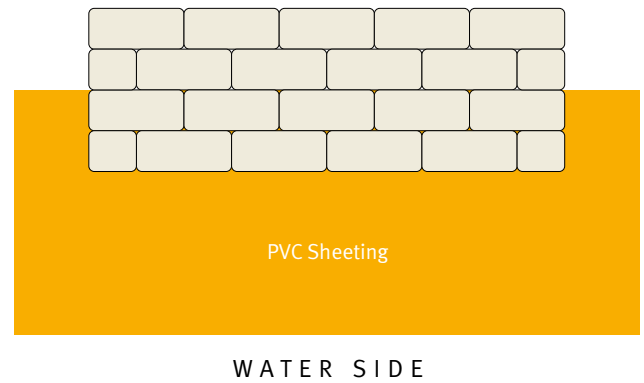


Figure 5: Pyramid placement

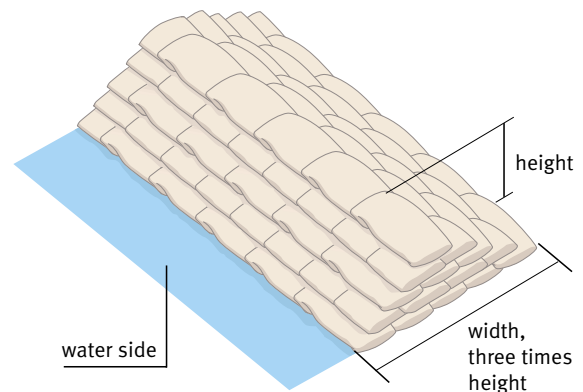
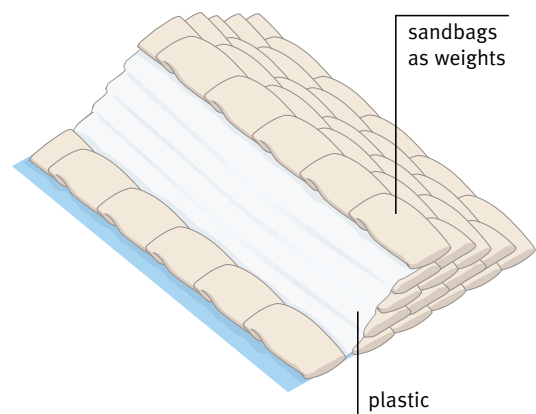


Figure 6: Additional waterproofing



Would you like to find out more about us,
or about your environment?

Then call us on
08708 506 506 (Mon–Fri 8–6)

email
enquiries@environment-agency.gov.uk

or visit our website
www.environment-agency.gov.uk

incident hotline **0800 80 70 60** (24hrs)
floodline **0845 988 1188**



Environment first: Viewing this on-screen? Please consider the environment and only print if absolutely necessary. If you're reading a paper copy, please don't forget to reuse and recycle.