

Requirements for cavity barriers to concealed spaces located behind cladding with masonry substrates to houses and flats

(April 2022)

Scope

This guidance note covers the provision of cavity barriers to concealed spaces behind any external cladding including fibre cement, timber and tile hanging on masonry walls of houses and flats. The scope is limited to buildings with a floor no greater than 18m above the lowest adjoining external ground level.

Who should read this?

Technical and construction directors and managers, architects, designers, contractors, and site managers.

Who is responsible?

People who are responsible for building work (e.g., agent, designer, builder, or installer) must ensure that the work complies with all applicable requirements of the Building Regulations.

Building Regulation Requirements

The Building (Amendment) Regulations 2018 (England) and The Building (Amendment)(Wales) Regulations 2019 extended the definition of an External Wall to clarify that this now includes *"any decorative or other finish applied to an external wall..."*

Cavity barriers are covered by functional requirement B3(4) of the Building Regulations in England and Wales, mandatory standard 2.4 in Scotland and Regulation 35(4) in Northern Ireland.

NHBC Warranty Requirements (2021 Standards)

Technical Requirements

- R1-Statutory Requirement
Work shall comply with all relevant Building Regulations and other statutory requirements relating to the completed construction work.
- R3-Materials Requirement
All materials, products and building systems shall be suitable for their intended purpose.

NHBC Standards- Further Guidance

- 6.1 External Masonry walls
- 6.1.2 provision of information
- 6.1.4 Fire Resistance
- 6.1.16 Cladding

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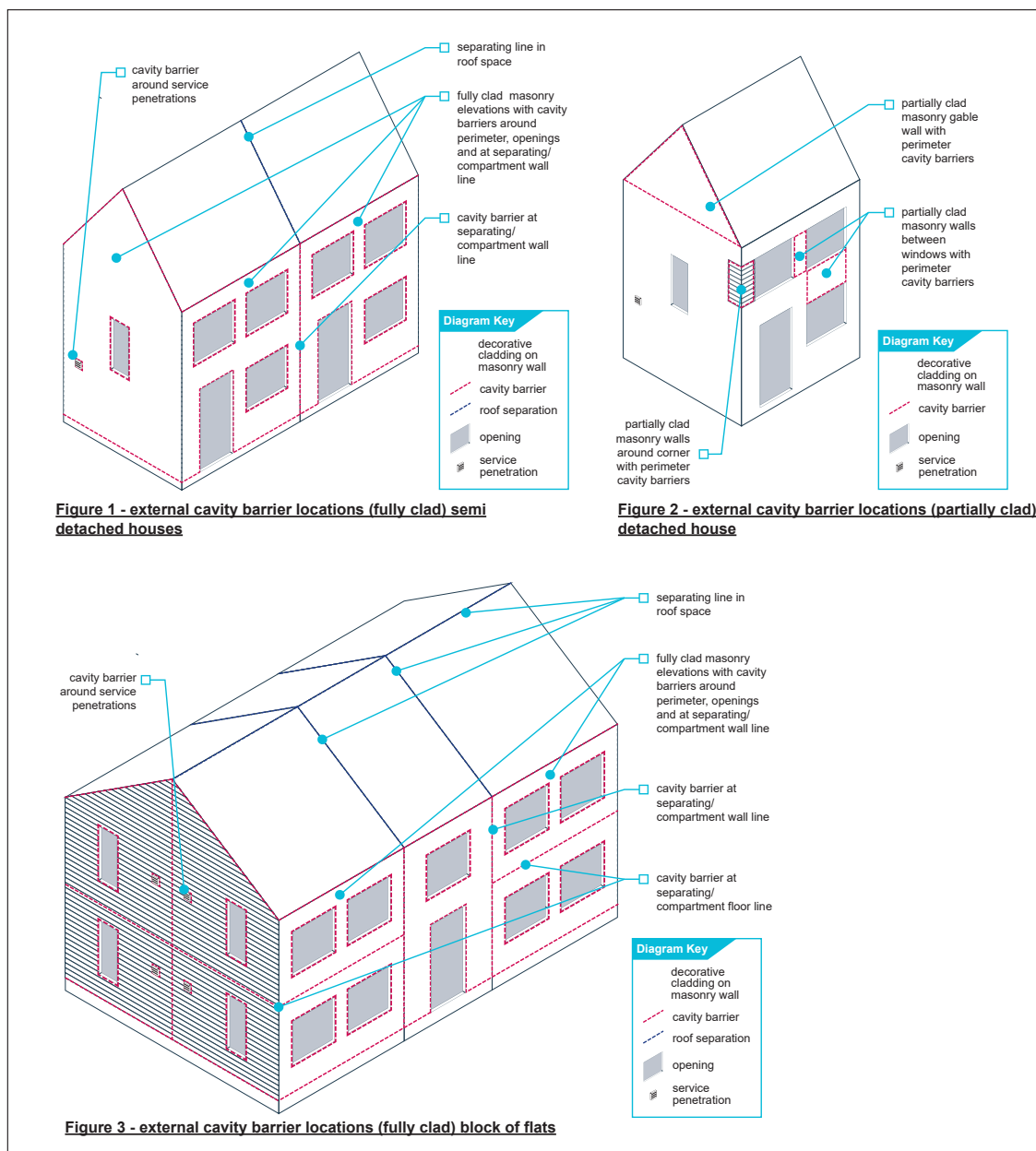
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Requirement for cavity barriers

Cavity barriers to concealed spaces behind external cladding should be positioned in the following locations.

- At the edges of cavities including eaves and verges, around openings such as windows and doors (see figures 1-3) and entry/exit points for services.
- At the junction between an external cavity wall and every compartment floor and compartment wall.

In the case of entry/exit points for services, further guidance can be found in Building Control Alliance guidance note 26, service penetrations through external wall constructions of residential buildings. Figures 1-3 show some examples of cavity barrier locations to concealed spaces located behind cladding with masonry substrates for different house types.



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When selecting and installing cavity barriers ensure the following:

- The size and fit are correct due to the varying cavity dimension (build tolerances) of the supporting structure and cladding.
- There is compatibility with the type of cladding e.g. its profile, jointing method, ventilation and fire characteristics.
- Cavity barriers are durable to perform their required functions for the intended design life (at least equal to the design life of the decorative cladding).
- Cavity barriers are mechanically fixed to a rigid construction e.g. a masonry substrate in accordance with manufacturer's instructions.
- Proprietary cavity barriers are installed in accordance with manufacturers recommendations.
- Required support and restraint is provided to compression fitted cavity barriers, consideration should be given to the fire characteristics of the components they abut to ensure that all cavities are fully closed in the event of a fire.
- Any open state cavity barrier¹ has appropriate third-party product approval where possible (see NHBC Technical Guidance 2.1/20 for Technical Approvals bodies acceptable to NHBC). However, NHBC will currently accept any open state cavity barrier tested in accordance with ASFP, TGD19(2017)² for use in these circumstances.

Fire performance of cavity barriers

Approved document B (England and Wales) and Technical Booklet E (Northern Ireland) provides guidance on cavity barriers with considerations on installation and guidance on suitable materials for certain situations. Minimum performance is given as 30 minutes integrity (E 30) and 15 minutes insulation (I 15).

In Scotland, Technical Handbook - Domestic confirms horizontal and vertical cavity barriers should achieve short fire duration (30 minutes integrity - E 30).

Proprietary cavity barriers must be supported with test evidence to show minimum periods of fire resistance are achieved in accordance with the regulations.

Cavities barriers around openings

The Building Regulation guidance documents in England and Wales allow the use of some materials around openings, these include:

- Steel of a minimum thickness of 0.5mm
- Timber of a minimum thickness of 38mm
- Calcium silicate, cement-based or gypsum-based boards of a minimum thickness of 12.5mm.
- Polythene sleeved mineral wool or mineral wool slab under compression³.
- Other proprietary products (including open state¹) with evidence to demonstrate E 30 & EI 15 fire performance.

For these materials it is important to ensure that a tight fit to rigid construction is achieved, where this is not possible, additional fire-stopping suitable for the situation will be necessary to seal any gaps between the cavity barrier and the cladding or wall.

The cavity barrier manufacturers technical team should be able to advise on the most suitable product for the application, provide installation guidance and site inspections.

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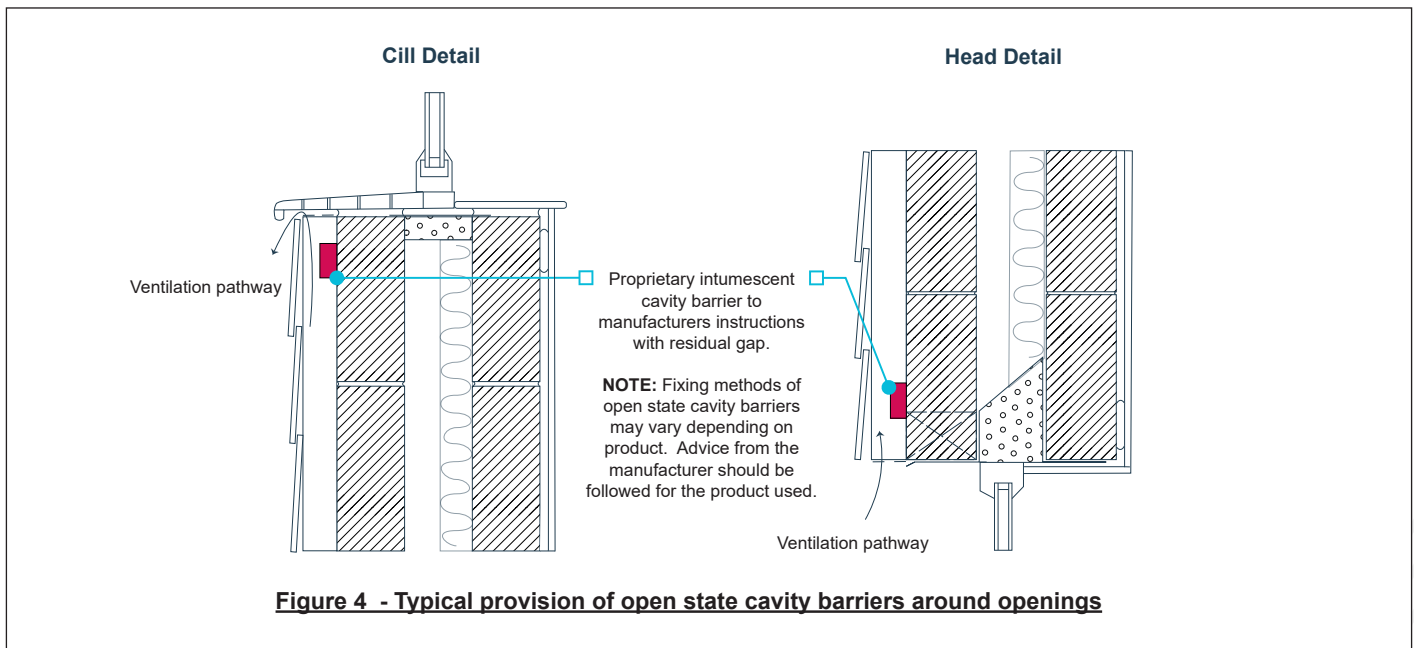
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Addressing ventilation and closing of cavities behind fibre cement and timber cladding

Fibre cement and timber cladding is typically fixed to vertical support battens to provide a drained and vented cavity.

Proprietary cladding manufacturers produce perforated enclosures which provide ventilation and drainage to the base, above openings and top of cavities.

To ensure vertical ventilation flow and drainage, horizontal intumescent open state cavity barriers¹ can be used e.g. at floor, roof and window junctions (see figure 4).



Addressing ventilation and closing of cavities behind vertical tile hanging.

Addressing ventilation and closing of cavities behind vertical tile hanging.

Vertical tile hanging is typically fixed to horizontal support battens. Vertical and horizontal cavity barriers are still required to close the cavity e.g. around openings and at the edges. One way of closing the cavity is to point with cement mortar (see figure 5).

In very severely exposed conditions, vertical counter battens can be used to permit more efficient drainage of any water which might be driven through the tile joints.

The provision of cavity barriers may be varied for tile hanging within a building compartment where this is small areas such as between a ground and first floor window, or as a gable feature. In these cases, horizontal battens limit the spread of smoke and fire; therefore, no additional barriers are required if all of the following conditions are met:

- The horizontal battens are fixed directly to the wall with no counter batten.
- The horizontal battens are continuous and have no gaps between joints.
- Penetrations (such as window openings) are completely sealed around their edges as described above.

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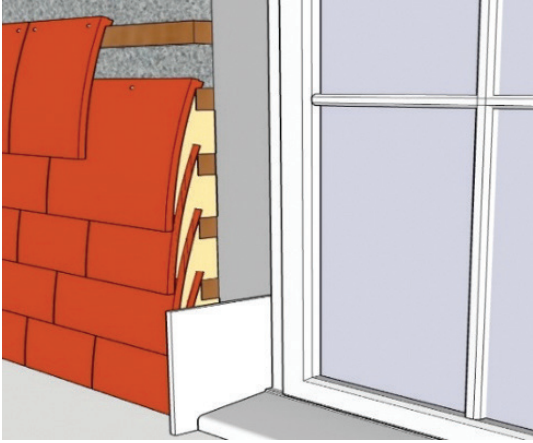


Figure 5 - Typical cement mortar pointing to close the cavity around openings.

Notes:

1. ASFP define these as barriers that allow ventilation and drainage in the cold state but expand to close the cavity when exposed to heat.
2. 2017; Association for Specialist Fire Protection: ASFP Technical Guidance Document - TGD 19: Fire Resistance Test for 'Open-State' Cavity Barriers used in the external envelope or fabric of buildings.
3. Polythene-sleeved mineral wool, or mineral wool slab, under compression (3mm to 5mm) when installed in the cavity.