

Under Floor Heating Technical Monitoring Guidance

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Please note that there are NEW Question Sets for Technical Monitoring and Health and Safety in ECO3.

In addition, the following Health and Safety questions no longer appear as specific questions, as they did under ECO2t:

- HSUFI-1) Are fire barriers installed as specified?
- HSUFI-5) Are all the air bricks clear of insulation material?
- HSUFI-6) Is there adequate ventilation in the sub floor void, where applicable?

These are now incorporated into the following two questions:

- HSUFI-1) Has the underfloor insulation in the property been installed as per manufacturer's instructions and other guidance?
- HSUFI-2) Do you believe that there are no other safety related issues with the installation?

Specifically, in relation to HSUFI-1, queries had been raised as to an appropriate fixing and material selection when insulation is being applied to an accessible space; e.g. a basement or cellar*. The main query being **whether it is acceptable to install mineral wool fixed with netting in this circumstance.**

*(*Note – a heated basement or cellar would not be an eligible installation unless the lowest un-insulated floor surface inside the heat loss perimeter was the surface being treated. In some cases, this may be a subterranean solid floor.)*

Having referenced 'Building Regulations Part B Table B4 1. Residential (b & c)' this identified a requirement for a minimum of 30-minutes of fire resistance in basements ceilings (in instances where the property is no more than 10m in height). This was raised at an ATMA Technical Meeting for clarification, who consulted with the Technical Officer at the Association for Specialist Fire Protection who subsequently confirmed this requirement. The response indicated that any application to a basement ceiling would be required to meet this 30-minute rule and highlighted the need for appropriate fire testing of any combinations of materials (used as a system) in retrofitting Under Floor Insulation. Garden netting or other branded netting does not meet this requirement; despite some manufacturer's suggesting that metal chicken wire could be used, this is also unlikely to meet the requirements unless tested and proven to do so.

It should also be noted that the definition of a Basement Storey in the new edition of Part B has changed. In the version released 5th July 2019 a basement storey is defined as follows, which may increase instances of spaces previously assumed to be floor voids needing to be treated as basements:

- **Basement storey** – A storey with a floor that, at some point, is more than 1200mm below the highest level of ground beside the outside walls. (However, see Appendix B, paragraph B26c, for situations where the storey is considered to be a basement only because of a sloping site.)

- **Appendix B, paragraph c** – If, due to the slope of the ground, one side of a basement is open at ground level (allowing smoke to vent and providing access for firefighting) for elements of structure in that storey it may be appropriate to adopt the standard of fire resistance that applies to above ground structures.

Note: Netting MAY still be an appropriate method of fixing in an underfloor void, if the manufacturer of both the netting and the insulation agree that their products are compatible, as the fire protection requirements are different for floor voids and less stringent.

What does it effect?

Moving forwards, any installations where the space is accessible, usable by the occupants and classified as a Basement Storey should include appropriate fire protection. In addition to the insulation layers and other components meeting these requirements, the installer may also need to take advice on whether a Fire Rated Door with self-closing mechanism and appropriate Intumescent Seals are also required.

Note: For the purposes of this requirement, a ceiling *does not* include any of the following:

- a.) Trap doors and their frames.
- b.) The Frames of windows or rooflights and frames in which glazing is fitted.

However, it should be noted that there are particular additional requirements for integral garages, use of suspended ceilings, compartment walls and where the property is 10m+ in height; which contain protection measures that exceed that of a standard basement storey and may increase the Fire Resistance requirement to 60 mins or more.

What should you be doing?

If there is any doubt over the compliance of the installation, in any of the scenarios below, in relation to Fire related Regulations; then you should be asking for an independent report from Building Control confirming that they are happy with the approach taken. A Building Control Notice is a mandatory requirement of PAS 2030:2017 for this measure.

When conducting a UFI installation:

Where the installation is in a cellar or basement;

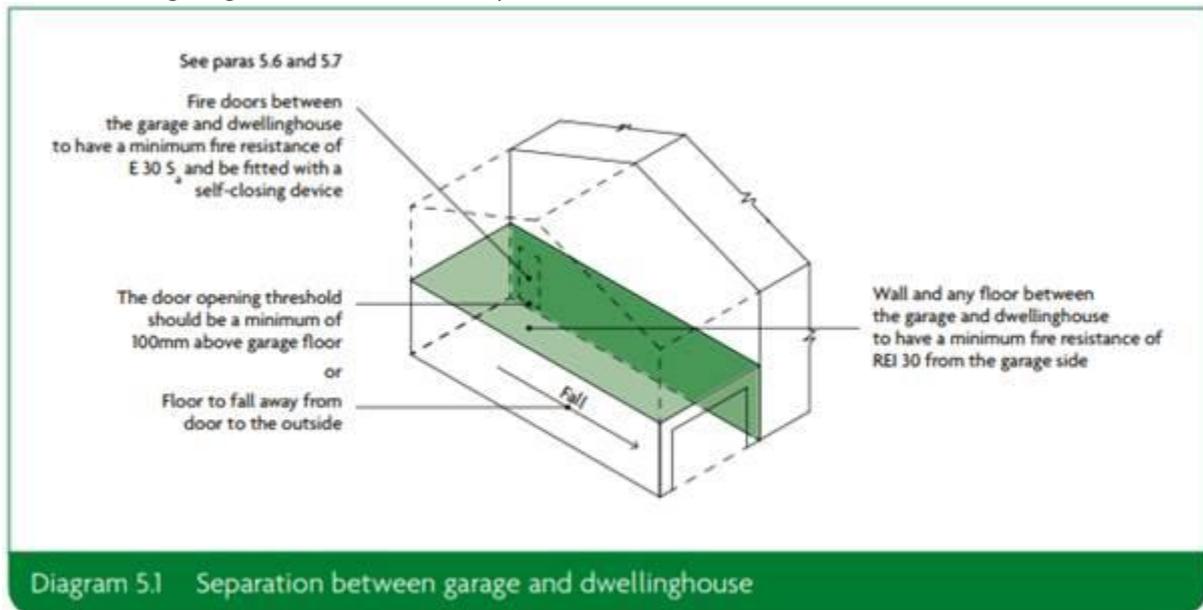
- Ensure that the floor treated is the lowest floor in the heat loss perimeter.
- Determine, using the definition of a Basement Storey, whether the minimum 30 mins Fire Resistance is required.
- Ensure that this method of installation is compatible with the manufacturer.
- Ensure that the method meets Part B of the Fire Regulations where necessary.

Where the installation is to a floor void;

- Determine, using the definition of a Basement Storey, whether the minimum 30 mins Fire Resistance is required.
- If yes, follow the instructions above for cellars and basements.
- If no, ensure that the fixing method does not compromise the existing material (e.g. compress insulation affecting its performance).
- Ensure it is firmly fixed by an appropriate means as approved by the manufacturer of the insulation material.
- Netting can be a suitable solution in this instance, as long as it is permitted by the manufacturer of the insulation.

Where the installation is to an integral garage;

- Establish that insulation does not already exist between the inter-floor void.
- The fire protection requirements can be even greater for integral garages, as this an area which is designed to store combustible fuel or vehicles or machinery containing combustible fuels. In addition to the same 30 minute fire resistance requirement, there are regulations around the requirement for a step down into the space at a minimum of 100 mm / or an equivalent fall in the slope of the garage floor facing outwards, an appropriate FD30 fire door to be in place protecting the habitable space with appropriate self-closing mechanism and intumescent smoke seals.
- It is unclear whether an installer undertaking UFI in an integral garage that is non-compliant prior to the installation would need to undertake this work too, we are waiting for further guidance on this. In the interim we should be flagging this at C2 stage to the installer and failing this at C3 stage, requesting further proof in the form of an independent report from Building Control advising that the methodology followed is satisfactory.
- The following diagram illustrates the requirements in Part. B



Whilst installing Underfloor Insulation, you should also be paying attention to the below:

- Ensure that adequate sub-floor ventilation has been provided
 - Crossflow usually achieved by the positioning of suitable sized air bricks on opposite walls.
 - These airbricks need to be free from dust, vegetation and other impediments.
 - Where premises have adjoining solid floor extensions, there should be ductwork beneath supplying cross flow ventilation.
- Ensure that water pipework in the newly formed 'cold space' is appropriately insulated.
- Ensure that any penetrations through the floor to be treated are sealed appropriately.
- Ensure that the structure of the existing floor is suitable for the insulation to be applied; i.e. no evidence of damp, rot, infestation etc.
- Ensure the underfloor area is free from pests and rodents.
- Ensure there are no existing leaks from pipework or water accumulation at floor level.
- Any wet rooms in the property, especially the floor above, have appropriate extract ventilation; habitable rooms have sufficient background ventilation to ensure compliance with PAS2030.
- If required in manufacturer's instructions, an appropriate floor cover has been applied to any wet rooms in the space above the area being treated (this is usually 22mm ply as a minimum, to prevent water escape).

- This is a requirement of Part C of the Building Regulations.
- Ensure any combustion appliances in the space to be insulated have appropriate combustion ventilation.
- Ensure that any high amperage cables (electric shower, cooker etc) that may be clipped to the underside of the floor joist are not covered by the insulation.
- Ensure that any other in-situ equipment, e.g. Radon Sumps, will not be compromised by the work undertaken.
- Ensure that the insulation is applied in a manner which ensures that there are no exposed joists acting as thermal bridges.

Further guidance

Guidance is currently limited and existing manufacturer's instructions do not all adequately cover retrofit of materials in the range of scenario's listed above.

Manufacturer's Guidance should still be followed, unless it overrides a core requirement of PAS e.g. thermal bridging avoidance which should be addressed, particularly at floor joist ends which should be treated appropriately and covered with insulation to avoid future structural issues.

Again, at the recent ATMA Technical Committee the following was decided:

Thermal bridging on joists: 'Thermal bridge must be eliminated for joist ends and these may need to be treated to prevent joist rot. Failure in this area should drive manufacturer adherence to PAS'.

'It was confirmed by the group that the joists are considered to be Thermal Bridges when left untreated i.e. area between joist only is treated leaving exposed timbers and this should be failed at C3 stage against TMQ1'.

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