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Will a rug affect my underfloor heating?

ARCHITECT'S CLINIC

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Q I have an open-plan kitchen/living area. I'd like to put a big rug in the living area. Will it affect the underfloor heating?"

A UNDER-FLOOR heating (UFH) offers a number of benefits over a traditional heating system when it comes to open-plan spaces. First, as this heat source eliminates the need for radiators, it allows greater flexibility in the planning and organisation of a space, freeing up wall space for furniture. It contributes to the clean lines generally sought as part of an open-plan design.

Second, as almost the entire floor is acting as the heat source, both hot and cold-spots are essentially eliminated, and the system provides a uniform and ambient gentle heat throughout the area. Third, as the heat source is below the floor, little if any of the heat is wasted as it rises into the room and so, it's generally an extremely efficient method of heating.

The efficiency of the UFH system will depend on a number of factors — the insulation levels beneath the layer of heating pipework, the distances between the pipes themselves, the depth of the slab or screed above the heating pipework, and the make-up of the slab — whether it's a 'traditional' concrete slab or an easy-screed or similar proprietary material. The thermal conductivity of the slab or screed, along with the flooring material laid on top will impact on the heat-up time and heat output of the UFH system — flooring materials with high thermal conductivity heat up more quickly, and are therefore more efficient to use with UFH.

Consider a rug's suitability in the context of the flooring material, eg, is the rug to be laid over a timber floor finish? The rug will to a greater or lesser degree, act as a 'blanket', locally restricting the passage of the heat from the floor slab into the room. If too much of the heat is trapped, it can cause issues with the timber floor. Most timber floors have a top temperature restriction (*c*27°C), and care should be taken to ensure that the rug doesn't trap the heat, causing the floor temperature

to rise beyond this level. If you do have a timber floor, check with your supplier who can advise you on this.

Many rugs (and carpets) are suitable for use with UFH systems. As with a timber floor, often they will also have a temperature restriction of 27°C which would need to be confirmed and checked against the temperature to which the UFH system currently heats the floor.

In short, choose your rug carefully to work with the under-floor system. The rug should have low thermal resistance, and should ideally be hessian, rather than felt-backed, as the felt can create a thermal block, hindering performance and potentially impacting on the finished floor. Typically carpets and rugs will have a thermal resistance top rating of 1 to 2, so you should confirm with the supplier of the rug that the tog value doesn't result in an overall value that exceeds 2.5.

Finally, give careful thought to the size and thickness of the rug you're considering. Too big and thick a rug, aside from the technical issues noted above, may have the effect of creating a cooler spot within the open-plan area, right where your intention is to create the most cosy space. The perfect rug will have negligible impact on the performance of the UFH system, while still creating atmosphere and a focal-point for the living space within the overall open-plan area.

If you are considering changes to your home, work with a registered architect. Check ria.ie, the registration body for architects in Ireland.

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