

Use of recessed lighting with PIR/PUR insulation



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Information document

The use of recessed lighting in ceilings is common across both the new build and refurbishment sectors. If a recessed light is installed directly into a high performing PIR / PUR insulation, without taking appropriate precautions, then there will be little chance for heat generated by the lighting to dissipate. The insulation is thermoset, which means it will not melt under the heat from the lights, however excessive heat may affect the performance of the light.

In all cases, the manufacturer's instructions supplied with the light must be followed along with any technical information from the insulation manufacturer. The light manufacturer should specify, amongst other things, the amount of space to be left around the back of the light, its fire rating, whether the fitting can be covered with thermal insulation, and the type/wattage of lamps that can be fitted. It may also be worth consulting the building warranty providers to check if they have any additional requirements which need to be complied with.

IMA also recommend the following measures:

- In order to prevent penetrating the insulation to recess light fittings, a 'service void' or a false ceiling in effect can be created below the insulation. The depth of this will have to be determined by the lighting manufacturer. The benefit of this is twofold – the insulation or inbuilt air and vapour control layer will not be penetrated and secondly the void could be deemed as a low emissivity air space – potentially meaning less insulation is needed.
- If placing the lighting unit into the insulation, a rule of thumb is to cut a hole in the insulation twice the diameter of the light fitting. Mount the light fitting to the plasterboard as normal. Maintain a clear air space around the light fitting, according to the manufacturer's instructions. To avoid warm, moist air being drawn into the roof space and potentially risking rot as well as clearly losing energy, an intumescent or fireproof 'hat' needs to be placed over the light fitting – taking care to maintain the clear space required. Insulation can then be placed over this to avoid the heat loss. Many lighting manufacturers will have their own products to solve this problem.
- Consideration should also be given to the implications of electrical cables, as the cables to supply recessed fittings will often be either fully or partially buried within insulation. The effect is that the insulation could reduce the load-carrying capacity of that cable which may have to be increased in size to safely carry the load. The effect is as follows:
 - Circuits run within thermal insulation must be protected with cartridge fuses or mini circuit-breakers (MCBs). Rewirable fuses are not suitable.
 - Cables fully enclosed by insulation may need to be increased in size above the standard recommended size by as much as 20% if they pass at right angles through an insulating layer, and as much as 50% if they are enclosed along their length for more than 500 mm.
 - For cables enclosed by insulation but in contact with a thermally conductive surface on one side, the larger of the standard recommended sizes will generally need to be used.

For more information refer to BS 7671.

If you have any queries regarding the installation of recessed lighting consult a qualified electrician.

For more details on the benefits of PIR insulation please visit: insulationmanufacturers.org.uk



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