

## **What The Regulations Say**

The IEE receives a number of enquiries from designers and installers and others regarding the application of Regulation 527-02-01 when installing speakers in ceilings in domestic premises.

Regulation 527-02-01 is clear enough. It requires that where a wiring system passes through elements of building construction such as floors, walls, roofs, ceilings, partitions or cavity barriers, the openings remaining after passage of the wiring system shall be sealed according to the degree of fire resistance required of the element concerned (if any). The two words in brackets at the end of the Regulation, (if any), highlight the problem. Simply stated, the question is: if an installer is installing one or more speakers in a location such as a domestic lounge, for example, what degree of fire resistance is required? Is any degree of fire resistance required?

This question has been highlighted by the introduction of Part P into the Building Regulations. This article will not deal with protection against thermal effects, for which reference should be made to Chapter 42 of BS 7671: 2001 and IEE Guidance Note 4, Protection Against Fire. Reference should always be made to Part B of the Building Regulations for fire safety requirements. For sound insulation requirements, reference should be made to Part E of the Building Regulations. It should be emphasised at the outset that this article is intended to provide guidance, which, it is hoped, will prove helpful; it is recommended that your local building control be consulted for advice.

## **Fire compartments**

Let's begin with a brief review of some theory about fire safety. The spread of fire within a building is restricted by sub-dividing the building into compartments separated from one another by walls and/or floors of fire-resisting construction. There are two reasons for this:

1. To prevent the rapid spread of fire that could trap occupants of the building.
2. To reduce the chance of fires becoming large on the basis that large fires are more dangerous not only to occupants and fire service personnel but to people in the vicinity of the building.

## **Dwellings**

Walls that separate semi-detached houses or terraced houses are constructed as fire compartment walls and the houses are considered as separate buildings. Where a domestic garage is attached to a house, (or forms an integral part of it), the garage should be separated from the rest of the house. In buildings containing flats or maisonettes, every floor is constructed as a fire compartment floor (unless it is within a maisonette, i.e. between one storey and another within one dwelling) and every wall that separates a flat or a maisonette from any other part of the building is constructed as a fire compartment wall. Otherwise, the walls and ceilings within detached, semi-detached and terraced houses are not constructed as fire compartment walls and ceilings.

## **Installing speakers in ceilings that are not fire compartments**

Speakers are commonly installed in locations such as lounge ceilings, which are not fire compartment ceilings. But because they are not fire compartment ceilings does not mean that they don't require some degree of fire resistance. The minimum fire resistance of a floor in a two-storey house, for example, is given in Appendix A of Approved Document B, 'Fire Safety', as 30 minutes. The idea is that, in a fire situation, the floor will not collapse for at least 30 minutes, enabling building occupants to leave safely. In-ceiling speakers are usually made of plastic and have a diameter of approximately 200mm. Common sense suggests that cutting a number of large holes in the plasterboard ceiling of a

timber joisted floor and installing plastic in-ceiling speakers may compromise its fire resistance capability.

### **Speakers in ceilings under roof spaces**

In situations where speakers are installed in ceilings under roof spaces, where debris or thermal insulation may accumulate on top of the speaker, a case could be made for installing a HOODY™ speaker hood to keep the speaker in good working order and improve its sound performance.

### **Speakers in flats and maisonettes**

In buildings containing flats or maisonettes, floors are constructed as fire compartment floors. However, suspended ceilings, comprising metal grids and plasterboard with voids of approximately three inches, are frequently installed for sound insulation and to hide services. Where suspended ceilings have been installed in flats and maisonettes, they can conveniently be utilized to install speakers without fireproofing. In Scotland, the Building Regulations don't allow speakers to be installed in fire compartment ceilings if they are timber-based, unless a suspended ceiling has been provided. It is understood that this requirement is to reduce noise transmission between dwellings.

### **Installing speakers in fire compartment ceilings**

For fire compartments to be effective, there must be continuity at the junctions of the fire-resisting elements that enclose them, and any openings from one compartment to another should not present a weakness. Section 9 of Approved Document B, 'Fire Safety' permits openings to be made in compartment walls and floors for certain purposes, including the passage of pipes, etc, that meet the provisions in Section 11. Clearly, the requirements of Approved Document B must be satisfied when installing speakers in fire compartment ceilings. The advisability of keeping the number of speakers in any one area to a minimum and to space them as far apart as possible is especially important when installing speakers in fire compartment ceilings. As the period of fire resistance for fire compartment ceilings will be at least 60 minutes, it will be necessary to restore their fire resistance capability. The use of HOODY™ fire hoods is one of the only ways of achieving this.

For any In-ceiling speaker installation it is recommended that the local authority building control be consulted.