

## FREQUENTLY ASKED QUESTIONS

### **What are i-Joists?**

Construction within residential buildings has changed from the installation of C16 and C24 softwood timbers, which are the most common used within the UK, to that of constructing upper floors using factory-built timber i-Joists, which are also known as i-Beams. These i-Joists are basically timber versions of the RSJ (Rolled Steel Joist), comprising a top and bottom timber flange combined with a tall vertical OSB (Orientated Strand Board) web.

Staircraft TFSI-Joists feature a high-quality timber flange combined with an enhanced OSB web. The joint between web and flange has been engineered with a double finger to increase strength and there are no web joints traditionally the weakest part of an i-Joist.

The main appeal is that they are strong, whilst being lightweight with enhanced rigidity provides a high strength-to-weight ratio allowing for easier handling in transportation and installation on-site. They are easier to cut into the required length and can be installed quicker on site, reducing installation times and they are not prone to shrinking and warping resulting in a quieter floor construction. They do not however, provide a commercial advantage with cost, being more expensive, however one major advantage is that they can be installed in greater lengths without the need for supporting columns or wall beams allowing for larger open-plan spaces, satisfying a modern trend in the construction of new residential applications.

### **What are Fire Rating?**

Some current Building Regulations require fire rated luminaires to be installed. If a downlight is fire rated, it has intumescent materials incorporated into its design.

These materials will expand when heated above a certain temperature, blocking any gaps, thereby maintaining the integrity of the ceiling and its ability to keep a fire from spreading to other areas of the structure.

The fire rating is applied after the product has been tested and proven to withstand exposure to fire within certain time limits and building constructions. Your local Building Regulations will dictate whether fire rated products are necessary

### **What does 30, 60 and 90 minute fire rated mean?**

Building Regulation Part B specifies the level of fire protection required within different types of property. Fire Rated Downlights are tested to provide 30, 60 and 90 minute protection dependant on the ceiling type. The rating depends on the intended use of the building and most importantly how many floors it has.

### **What does the Building Regulation Part B state regarding fire rated lighting in i-Joists?**

The fire rating required for floors in domestic buildings is generally 30 minutes, and in flats & apartments 60 minutes. I-Joist suppliers need to demonstrate their products can satisfy these fire ratings by having tests carried out in line with the appropriate British or European Standards. Staircrafts i-Joists have been tested to these requirements and have been shown to provide a 30 minute rating using 12.5mm standard Type A plasterboard or a 60 minute fire rating with 2x 15mm Type D or F plasterboards

### **Which assessment was done on Aurora Fire Rated Downlights and Staircraft i-Joists?**

Both Aurora and Staircraft had both independently tested their products to meet the relevant fire rating standards, but Aurora had tested their downlights in floors with timber i-joists and Staircraft had not incorporated downlights in their tests. The two companies then collaborated by sharing their test results with an independent fire test laboratory to carry out an expert assessment to determine whether a 30 minute fire rating would be granted if Aurora fire rated downlights were to be included in

floors using Staircraft i-Joists. The resulting assessment report confirmed that a 30 minute fire rating would still be applicable when Aurora's downlights are incorporated into Staircraft i-joist floors.

### **Why does the testing of floors constructed from I-Joists and fitted with recessed downlights need to be carried out?**

Fires which develop within buildings where solid timber joist intermediate floors are installed will offer a greater protection to that where the upper floors are constructed using I-Joists. At some point during the fire situation, the plasterboard will become detached partially or wholly from the i-joists allowing the fire to gain direct access to the floor i-joist construction. When this occurs, the time between the fire gaining access to the joists and the collapse of the upper floors will determine whether or not the construction can remain in place for the duration of the test. The time for a fire to burn through a solid timber joist is greater than the time required to burn through an I-Joist which would then result in an earlier collapse of the upper floor, possibly within the period for which the original testing was carried out. This situation could therefore mean the possibility that the I-Joist construction into which the downlights are fitted could not provide the level of compliance required for the application.

So as to provide accurate clarification of the installation of recessed downlights into an i-Joist constructed upper floor, testing needs to be carried out with the lighting equipment installed into the appropriate floor construction with the appropriate ceiling.

### **More information on the assessment?**

The expert assessment that took place involved experienced fire test engineers analysing the test results obtained by both Aurora and Staircraft in 9 separate test reports and assessing which combinations of the products tested could be successfully combined to provide a 30 minute fire rated ceiling assembly. The resulting 40 page assessment report concluded 15 separate types of fire rated downlight produced by Aurora could be used in domestic floors constructed with all types of Staircraft i-Joist. An abridged version of the assessment report is available for download via either the Aurora or Staircraft website.

### **Which products have been assessed?**

The full range of TFSi i-Joists manufactured by Staircraft have been assessed together with the following Aurora downlights as being capable of providing a 30 minute fire rated floor construction:

AU-A1ZBMPRO1ZX

AU-STZBMPRO1

AU-MPRO1

AU-MPRO2

EN-DLM981X with bezel EN-BZ91 (IP20)

EN-DLM981X with bezel EN-BZ93 (IP65)

EN-DLM982X with bezel EN-BZ92

EN-DE5

EN-DE6PRO with bezel EN-BZE8

EN-DE8 with bezel EN-BZE8

EN-DE52

EN-DE82

EN-FD101W

EN-FD102

EN-FD103W