



HEGLEY ACOUSTIC CONSULTANTS

5 February 2008

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Dear Steve

ACOUSTIC RATING of COMFLOR 210

Further to your recent request, we have considered the Sound Transmission Class (STC) and the Impact Insulation Class (IIC) of the ComFlor 210 composite floor. These ratings are used by the New Zealand Building Code for describing the acoustic performance of inter tenancy walls and floors of residential buildings and are used to protect occupants from undue noise from adjacent occupancies. The requirements of Section G6 of the Building Code are shown below:

The Sound Transmission Class (STC) of walls, floors and ceilings, shall be no less than 55.

The Impact Insulation Class (IIC) of floors shall be no less than 55.

For both STC and IIC ratings, the Building Code requires that field tests shall be within 5 points of the performance requirement.

It should be noted that the Building Code is currently under review and it is anticipated that the STC and IIC ratings will be replaced and that the minimum requirements will be increased. As the new Code is still in draft form, it has not been considered at this point but it will be a simple procedure to update this letter once the revised G6 is released.

The STC and IIC ratings have been considered separately below:

Sound Transmission Class

The sound transmission class of the ComFlor has been predicted using the INSUL computer prediction program and comparisons with onsite testing of other, similar floor types. The STC rating of a floor depends on:

- Topping thickness of the ComFlor 210;
- Type of ceiling, if any;
- Depth of the ceiling cavity;
- Method of supporting the ceiling (such as a suspension system);
- Presence of an absorptive material in the ceiling cavity;
- Number of penetrations in the ceiling.

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As these factors are expected to vary between projects, analysis has been undertaken for a range of typical types of construction. The performance of other types of construction can be assessed as required. Figure 1 below shows the relevant parts of the ComFlor that have been considered.

Table 1 below summarises the STC ratings for the range of ComFlor 210 depths and for a variety of ceiling combinations. A ceiling cavity (between the underside of the tray and the top of the ceiling) of 220mm has been selected with larger cavities resulting in improved results. Analysis has been based on a Rondo suspension system, which is typical for apartment floors. Alternative suspension systems are likely to provide similar results although should be checked prior to their use.

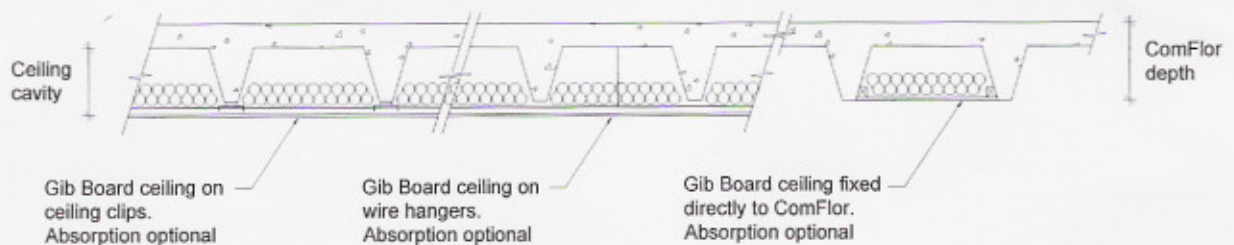


Figure 1. Typical Section through ComFlor 210 Showing Ceiling Options

Four Gib Board ceiling options are included using standard Gibraltar board. Similar thicknesses of Fyreline, Aqualine, Noiseline or Ultraline will all provide the same or improved results. The no ceiling option has been provided as it may be useful for floors between apartments and non residential uses below, such as car parks or commercial areas or for non residential situations, such as commercial fit outs where a ceiling with a poor STC rating is proposed and which will have only a minor effect on the overall STC rating of the combined system.

One further factor that may affect the STC performance is any penetrations in the ceiling for items such as downlights or mechanical ventilation grills. The STC ratings quoted in Table 1 below are based on a maximum open area equivalent to 1 x 130mm diameter down light per 8m² of ceiling. Should more open area be required, the acoustic performance of the floor may be less than reported below and could be checked if required.

ComFlor Depth (mm)	STC Rating of ComFlor 210				
	No Ceiling	10mm Standard Gib	10mm Standard Gib	10mm Standard Gib	10mm Standard Gib
		Fixed directly to underside of ComFlor 210 tray. No absorption in cavity	Fixed directly to underside of ComFlor 210 tray. Absorption in cavity ²	Suspended ¹ nominally 10mm below bottom of rib No absorption in cavity	Suspended ¹ nominally 10mm below bottom of rib Absorption in cavity ²
270	43	51	53	53 ³	64
280	45	52	55	55	66
290	46	53	56	55	66
300	48	55	58	57	68
305	48	55	58	56	68
310	49	55	58	57	69
330	51	57	61	59	70
350	54	59	63	61	72
375	56	61	65	63	74
400	58	63	67	64	76

1. USC Donn ScrewFix steel frame suspension system with 2.5mm diameter wire hangers at 1200mm centres and strong backs at 1200mm centre or Gib Quiet Clip.
2. Absorption could be either 75mm thermal grade fibreglass blanket or 95mm Autex GreenStuf.
3. With 13mm Standard Gib Board, this increases to STC 55.

56

- Indicates performance of floor is STC 55 or greater and therefore meets the requirements of the Building Code.

Table 1. Summary of Floor STC Ratings for Different Construction Options

Impact Insulation Class

The same factors that control the STC rating of a floor also contribute to its IIC rating. The floor surface (including the presence of an acoustic underlay) is also a significant factor in the IIC rating of the floor. Given the number of acoustic underlays that are available, and the varying performance of each, it is impracticable to produce a table giving IIC ratings for a range of floor types and floor construction. However, with a suitable acoustic underlay and absorption in the ceiling cavity, any of the floors that satisfy the STC requirement will also satisfy the IIC requirement. It should be noted that the IIC rating depends largely on the acoustic underlay selected and, as with any type of floor, a substandard underlay or poor installation will result in the floor achieving substandard results.

Should you have any questions regarding the above please do not hesitate to contact me.

Yours sincerely
Hegley Acoustic Consultants

Rhys Hegley