



**HEGLEY ACOUSTIC  
CONSULTANTS**

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Brett Pocock  
ComFlor Building Systems  
Corus New Zealand Ltd  
P O Box 58 880  
Greenmount  
AUCKLAND

Dear Brett

**ACOUSTIC RATING of COMFLOR 60**

Further to your recent request, we have considered the Sound Transmission Class (STC) and the Impact Insulation Class (IIC) of the ComFlor 60 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. 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**

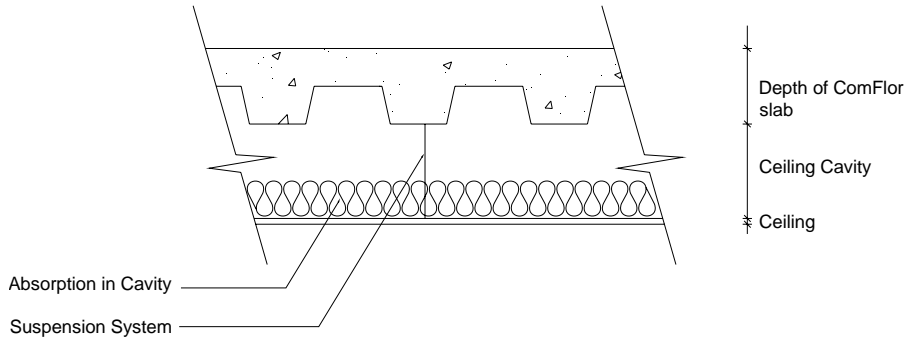
The sound transmission class of the ComFlor has been predicted using the INSUL computer prediction program and comparisons with onsite testing of other, similar floor types. The STC rating of a floor depends on:

- Topping thickness of the ComFlor 60;
- Type of ceiling, if any;
- Depth of 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.

**Environmental & Industrial Noise Control Engineering**

355 MANUKAU ROAD, P O BOX 26-283, AUCKLAND 1344  
TEL 09 638-8414 FAX 09 638-8497 EMAIL [hegley@acoustics.co.nz](mailto:hegley@acoustics.co.nz)

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.



**Figure 1. Typical Section through ComFlor 60**

Table 1 below summarises the STC ratings for the range of ComFlor 60 depths and for a variety of ceiling combinations. A ceiling cavity of 200mm 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.

The analysis has been based on a Standard Gib Board ceiling but similar thicknesses of Fyrelite, Aqualine, Noiseline or Ultraline will all provide the same or slightly improved results. Increasing the thickness of the ceiling will result in a minor increase in STC rating. The no ceiling option and the direct fix ceiling option have been provided as they may be useful for non residential situations, such as commercial fitouts where a sound rating that differs from the Building Code requirements for apartments may be necessary.

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 downlight per 8m<sup>2</sup> 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.

It should be noted that noise flanking the floors through the building structure will affect field tests and that as a result, it is unlikely that any floor, regardless of its construction, will test greater than STC 65.

ComFlor Depth (mm)	STC Rating of ComFlor 60						
	No Ceiling	10mm Gib Ceiling; Direct Fix to tray 50mm cavity		10mm Gib Ceiling; Resilient Fix <sup>1</sup> to tray 50mm cavity		10mm Gib Ceiling; Resilient Fix <sup>1</sup> to tray 200mm cavity	
		No Absorption	50mm Absorption <sup>2</sup>	No Absorption	50mm Absorption <sup>2</sup>	No Absorption	50mm Absorption <sup>2</sup>
125	45	45	54	45	60	54	62
130	45	46	54	47	60	55	63
140	46	48	55	48	61	55	64
150	48	50	56	50	61	57	66
160	49	50	57	51	62	57	67
170	50	52	58	52	62	58	68
180	51	52	59	53	62	58	69
190	53	53	60	54	63	60	69
200	54	55	60	55	64	61	70
210	55 <sup>3</sup>	56	61	56	64	61	73
250	58	58	64	58	64	64	74

- Use either: USC Donn ScrewFix steel frame suspension system with 2.5mm diameter wire hangers at 1200mm centres and strong backs at 1200mm centre; Gib Quiet Clip and furring channel; or ST-001 clip and furring channel.
- A suitable absorption would be 50 - 75mm thermal grade fibreglass or 95mm Autex GreenStuf.
- Minimum ComFlor depth to achieve the STC 55 minimum requirement of the Building Code without a ceiling.

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- 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

While the same factors that control the STC rating of a floor also contribute to its IIC rating, 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