



**HEGLEY ACOUSTIC
CONSULTANTS**

1 October 2009

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

Dear Brett

ACOUSTIC RATING of COMFLOR 80

Further to your recent request, we have considered the Sound Transmission Class (STC) and the Impact Insulation Class (IIC) of the ComFlor 80 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 programme and comparisons with onsite testing of other, similar floor types. The STC rating of a floor depends on:

- Topping thickness of the ComFlor 80;
- 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

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.

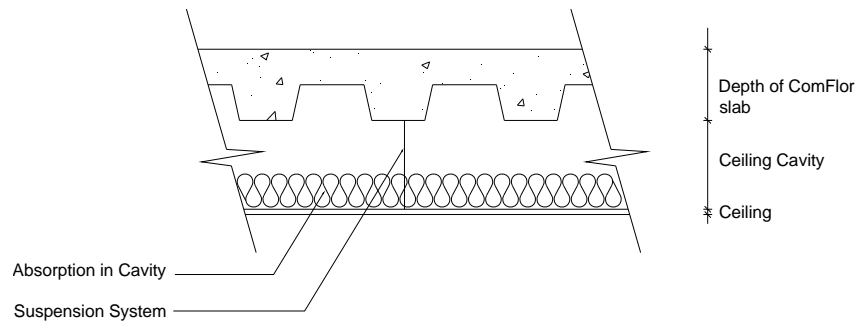


Figure 1. Typical Section through ComFlor 80

Table 1 below summarises the STC ratings for the range of ComFlor 80 depths and for a variety of ceiling combinations. A ceiling cavity of 200mm has been selected and larger cavities will result 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 Fyreline, 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 the 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 a commercial fitout where a sound rating that differs from the Building Code requirements for residential use 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 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.

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 80						
	No Ceiling	10mm Gib Ceiling; Direct Fix to tray 50mm cavity		10mm Gib Ceiling; Resilient Fix ¹ to tray 50mm cavity		10mm Gib Ceiling; Resilient Fix ¹ to tray 200mm cavity	
		No Absorption	50mm Absorption ²	No Absorption	50mm Absorption ²	No Absorption	50mm Absorption ²
140	43	44	53	44	59	52	62
145	45	45	54	45	60	54	63
150	45	46	54	47	60	55	63
160	46	48	55	48	61	55	64
170	48	50	56	50	61	57	66
180	49	50	57	51	62	57	67
190	50	52	58	52	62	58	68
200	51	52	59	53	62	58	69
210	53	53	60	54	63	60	69
230	55 ³	56	61	56	64	61	71
250	56	57	63	57	66	63	72

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

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

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 constructions. 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